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TREATISE

ON

CARRIAGE, SIGN, AND

ORNAMENTAL PAINTING,

CONTAINING DIRECTIONS FOR FORMING THE PRINCIPAL COLORING SUBSTANCES, COMPOSITION OF COLORS, VARNISHING, POLISHING, SMALTING, IMITATION PAINTING, &C. &C.

BY ORSON CAMPBELL.

PUBLISHED BY

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1841.

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ADVERTISEMENT.

THE author of the "Treatise on Carriage, Sign, and Ornamental Painting," having made himself thoroughly acquainted with the science and theory of Painting, and having devoted much of his time, for the last few years of his life, to the practice of the art and in arranging the matter for this work, was taken from the world without witnessing the accomplishment of his desires by seeing his Treatise issued from the Press.

At the earnest solicitation of the (now deceased) author and his friends, the subscriber consented to hazard the responsibility of securing the copy-right, and publishing the work for the benefit of posterity; and, particularly, the class of artists for whose more immediate benefit the work is designed.

But few works on the scientific principles of Painting are known to be extant: and that the profession will find in this Treatise much valuable information and instruction, the subscriber has not the least hesitancy in believing.

A practical knowledge of the art, to some considerable extent, has doubtless contributed in an eminent degree to the judicious arrangement of this work; nor, indeed, could there have been anticipated such a vast amount of useful and interesting matter in so small a compass, from any person who could not combine with a scientific and theoretical knowledge of the art a practical knowledge also. And in this respect the publisher has the fullest assurance that the merits of this Treatise will stand unrivalled.

In short, the publisher has the vanity to believe that this work, with all its imperfections, will meet with a ready patronage from a numerous class of Artists, to whom it is respectfully submitted.

RUSSEL R. LEWIS.

SCOTT, Cortland co., N. Y., March, 1841.

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PREFACE.

AMONG the multitude of books with which the world is filled, but little information on the subject of PAINTING can be obtained, in this country, that would be of use to the Modern Painter. Most that has appeared in the public prints of this country, on the Art of Painting, has appeared in the form of recipes, under the head of "CURIOUS," &c. If the methods of doing work recommended in those recipes, were ever in repute among any who were considered good Painters in the age they were written, they have long since become obsolete; and every attempt to work by them will result in a failure. Repeated failures in attempts of this kind have led Painters to the conclusion that a knowledge of the theory of Painting can not be obtained from the reading of books. This is true in reference to all the books on the subject of Painting before the American Public, with which the Author of the following Treatise has any acquaintance. They are evidently published by men who have but a limited or no *practical* knowledge of the art, and therefore disqualified to judge of what would be proper or improper to publish on the subject. But because works of the above description have not been found useful, it does not follow of necessity that the theory of Painting, to a considerable extent, at least, may not be learned from books properly written.

The Author of the TREATISE ON CARRIAGE, SIGN, AND ORNAMENTAL PAINTING, being apprized that there are a numerous class of American citizens whose circumstances will not permit them to go through a regular course of apprenticeship at Carriage, Sign, or Ornamental Painting, but who, notwithstanding, have found it to their interest to commence the business, but are not able to succeed to their own wishes, or to the satisfaction of their employers, for the want of a knowledge of theory as well as practice in their business, and, believing that no work of this kind is before the public by which they can be benefitted, was induced to offer to the public the following work. It is not anticipated that this Treatise will afford any material benefit to Painters who

are supposed to understand their business as they are most likely already familiar with most of the process given in this work.—The primary object of this publication is not to benefit those who consider themselves adepts in the Art of Painting, but to help those who are not. Neither does it contain all the different methods practiced by different Carriage, Sign,or Ornamental Painters, because, in the opinion of the Author, to give different methods for doing the same kinds of work, would serve rather to embarrass the unexperienced, than to afford them any additional benefit.

The Author, in preparing this work, has labored to render it as concise as the nature of the subjects it contains would admit. He has also avoided, as much as possible, the use of such terms as would not be likely to be understood by all, and preferred to make use of the most familiar language, believing that he would not only be the more readily understood, but the information given, would be the longer retained. Although this work does not contain all that could be written on Carriage Painting, &c., nothing is left out that is deemed necessary to benefit that class of individuals for whose benefit it is written, and the Author confidently expects they will derive all the benefit from it, it pretends to give.

THE AUTHOR.

De Ruyter, June, 1840.

TREATISE

ON

CARRIAGE, SIGN, AND ORNAMENTAL PAINTING.

A SHORT DESCRIPTIVE ACCOUNT OF THE PRINCIPAL COLORING SUBSTANCES NOW USED IN CARRIAGE, AND ORNAMENTAL PAINTING.

WHITES.

THE principal Whites, are, Spanish White and White Lead. The latter only used as a pigment, whereas, Spanish White, possessing but little or no coloring quality, is chiefly used in making putty.

SPANISH WHITE, is a pure clay, and on its argillaceous quality depends its solidity. Rolls of washed Chalk, which possess none of the qualities required in Spanish White, is sometimes sold under this denomination. It is also sometimes mixed with Chalk.—The difference, however, between real Spanish White and Chalk, or a mixture, may be ascertained by taking some small pigments and immersing them in half a glass of vinegar: If they disappear entirely, with effervescence, the whole is calcarious; if a part only remains, it shows it to be a mixture.

WHITE LEAD, or CARBONATE OF LEAD, is prepared, in the large way, by exposing sheet lead to the action of the vapor of vinegar. Various are the processes by which it is obtained; the following, according to P. F. Tingry, is considered one of the best: Sheets of Lead, about two feet long, five inches broad, and a quarter of an inch thick, are rolled up in loose coils and placed in earthen pots, each capable of holding six pints of fluid, but into it so much vinegar only is poured as will rise so high as not to touch the lead, which rests on a ledge half way down. The pots are then buried in fresh stable litter, where they remain for six months, during which time the vapors of the vinegar, elevated by the heat of the dung, oxidize the surface of the lead, and the oxide combines with the carbonic acid gas evolved from the fermenting materials of the bed. The carbonate appears as a white scaly brittle matter on the surface of the lead, and is separated by spreading the coils upon a perforated wooden floor, covered with water, and drawing them to and fro by rakes, which process detaches the White Lead, and causes

it to sink through the water and the holes of the floor to the bottom of a vessel placed below. It is afterwards ground in mills with water, and then dried in earthen pans placed in stoves. It was formerly ground dry, by which method, from its deleterious nature, the workmen suffered severely.

White Lead is sometimes adulterated with Chalk, which may be discovered by pouring distilled vinegar on the suspected carbonate, and then adding oxalic to the solution. The formation of a precipitate proves the presence of the Chalk.

BLACKS.

THE Blacks used in Oil Paintings, at the present day, are, Lamp Black and Patent Black.

LAMP BLACK, was originally procured from the decomposition of oil in lamps. It is now produced from the thick smoke exhaled by resinous bodies in a state of combustion. Much of the Lamp Black carried through the country and sold at the shops, is so filled with impurities as to render it unfit for any but the coarsest kind of Painting. That collected by the tar manufacturers, mostly contain fragments of clay, sticks, straw, &c., and should be rejected. The best that can be obtained in this country, is manufactured in Troy and Waterford, Rensselaer county, N. Y., from Resin, on a new and improved plan. Persons purchasing Lamp Black manufactured at the above-named places, may confidently expect a good article.

PATENT BLACK, is getting to be much used in Carriage and other kinds of Painting, and is preferred by many to Lamp Black. It is sold in small lumps or cakes, nearly as large as a hen's egg, and somewhat in the shape of an acorn.

BLUES.

PRUSSIAN BLUE, is the principal Blue now used in any kind of Painting, except in the higher branches of the Art, where durability of color and superior richness and mellowness of tone is required to be given, in which case, ULTRAMARINE, to all other Blues, is preferred.

PRUSSIAN BLUE, is a combination of Iron with an acid of a peculiar nature, called the Prussic or Hydrocyanic Acid, which, by the latest chemical researches, consists of prussic or cyanogen, a gaseous body, and hydrogen. It is usually thus prepared: Equal parts of Subcarbonate of Potash and dried Blood or Shavings of Horn, are heated red hot in a crucible, and six or eight pints of Water are poured upon the mixture when quite cool. The solution, being filtered, contains Hydrocyanate of Potash, together with Subcarbonate of Potash and some other products. It is then mixed with a solution, containing two parts of Alum annd one of Sulphate of Iron; a precipitate is obtained,

at first of a green hue, but which, by being washed with diluted Muriatic Acid, acquires a fine blue tint, and, being dried, is the Prussian Blue of commerce.

ULTRAMARINE, from its scarcity and high price, is found upon the pallet of but few artizans, and used only in the most valuable Paintings. Ultramarine is extracted from lapis lazuli, lapis cyanis or Azure Stone, which is of a bright blue color, and so hard as to strike fire with steel. The best method to obtain Ultramarine, according to Mr. Tingry, is the following: Put the Azure Stone into a crucible placed in a strong fire; when it is red hot, throw it into distilled vinegar; repeat this till all the lapis falls into powder; grind this powder in vinegar, and lay it on a blotting paper to dry; when dry, let it be ground very fine with linseed oil on a porphyry slab; (on the fineness of this grinding depends both the quality and quantity of the Ultramarine,) next, melt together three ounces and a half of Black Resin, three ounces of Yellow Resin, two ounces and a half of Burgundy Pitch, to which, when melted together, add two ounces and a half of Venice Turpentine; while all these are in a melted state, add to them three ounces and a half of the lapis lazuli, weighed before it is ground in the oil. When all these ingredients are well mixed, pour the whole mass into a basin of clear water; when it is sufficiently cool, knead it well with the hand under the water, and continue squeezing it until the blue color exudes from it; when the water is charged with the Ultramarine, pour it into another basin, and it will fall to the bottom of the water, which should be carefully poured off, and the Ultramarine dried in the sun or before the fire.

REDS.

THE Reds now used in Oil Paintings, are, Red Lead, Indian Red, Venitian Red, Vermilion, Rose Pink, and the Carminated Lakes.

RED LEAD is extensively employed both in House and Carriage Painting, and is obtained by exposing Massicot or Yellow Oxide of Lead, to the flames of a reverberatory furnace for forty-eight hours or till it becomes of a fine red color. In this process, it appears that frequent stirring is necessary, in order that every portion of the Oxide should come in contact with the air, so that an absorption of Oxygen should take place.

INDIAN RED, is a fine Purple, used chiefly in Portrait and other delicate Painting. This Red is sometimes called Persian Ochre, and is a dear color.

VENITIAN RED, is a natural Red Ochre brought from Venice. It is also produced in France, Germany, and many other places. It is a mixture of argillaceous and calcarious earths and Oxide of Iron, to which last substance its color is owing. Like the other Ochres, it is freed from its impurities by washing. Ochres readily mix with water, and the sand and stones which they contain, being heavier than themselves, subside. The water, turbid with the Ochre, is decanted by making it pass into a trough lower than

the vessel in which it was washed; when the Ochre has subsided, the clear water is drawn off; the Ochre is then taken out, and, being dried, is divided into small masses. Venitian Red is sometimes mixed with Spanish Brown; and some Spanish Brown of the best quality, is attempted to be sold for Venitian Red. Venitian Red differs from Spanish Brown, in being finer, lighter, and of a brighter red.

VERMILION, is a Sulphuret of Mercury, and is composed of seven parts of Mercury and one of Sulphur. The Sulphur is liquified in large earthen jars or in iron pots, and the Mercury is mixed in the proper proportions. These two matters become heated to such a degree by the mere effect of the combination, as to inflame; and when this result takes place, the Factitious Cinnabar, (a name given to this composition in this state,) is more easily sublimed, because the excess of sulphur is destroyed. The matter when cold is pulverized, and sublimed in flat earthen vessels, which are covered by other vessels of the same substance. These earthern vessels are arranged in long sand furnaces called galleries, where the sublimation is effected only by a very strong heat. If the first sublimation does not produce Cinnabar of a beautiful color when ground, the matter is subjected to a second sublimation, the effect of which is to destroy the quantity of sulphur greater than that essential to the most perfect combination, in regard to the tone of color required in vermilion.

The art of preparing fine Vermilion is in few hands. It is suspected that some material is used in its avigation which very much improves its color; that material has been by some supposed to be urine. Vermilion is a strong high color, and has no rival but in Carmine, which, though it produces a mellower and fuller color, is no less pleasing. Vermilion is extensively manufactured in Holland, but the best is brought from China, done up in small packages weighing about one ounce. It is sometimes adulterated with Red Lead. The adulteration may be detected by exposing the suspected article to heat in a crucible: if Lead be mixed with it, it will remain at the bottom of the crucible, while the real Vermilion is volatized by the heat. The best Vermilion is of a deep rich crimson color.

ROSE PINK, is a delicate color, inclining more to Purple than Scarlet. It is prepared from Chalk, colored with a decoction of Brazil Wood, with the addition of an alkaline salt. It is a color that soon fades, and is therefore of little value. It loses its color, in a great measure, if even suffered to become dry; it is, therefore, the custom of some Painters to keep it in a dark damp cellar, excluded from both light and air.

CARMINATED AND MADDER LAKE.—Carmine, a kind of fecula, so useful to the Painter, and so grateful to the eye in all its shades, is only the coloring part of a dried insect, known under the name of Cochineal. The following process for obtaining Carmine is from Ure's Dictionary of Chemistry, article LAKE: Take four ounces of finely powdered Cochineal, four or six quarts of rain water that has been previously boiled in a pewter kettle, boil the Cochineal in this water for six minutes; some add, during the

boiling, two drachms of powdered Cream of Tartar. Eight scruples of rock Alum are then to be added, and the whole kept upon the fire one minute longer. As soon as the gross powder has subsided to the bottom, and the decoction has become clear, the latter is to be carefully decanted into large cylindrical glasses, covered over and kept undisturbed till a fine powder is observed to have settled at the bottom; the superincumbent liquor is then to be poured off from the powder, and the powder dried. From the decanted liquor, which will be still much colored, the rest of the coloring matter may be separated by the addition of the solution of Tin, when it will yield a Carmine little inferior to the first product. A pound of Cochineal will produce about an ounce and a half of Carmine, and about a pound and a quarter of Red Lake.

CARMINATED LAKE.—The decoction which floats over the colored precipitate, Carmine, being still highly colored, the addition of Alum, which is afterwards decomposed by a solution of Carbonate of Soda, precipitates the alumina, which, in precipitating, carries with it the color of the solution. According to the quantity prescribed for the composition, two or three ounces of Alum may be employed. The greater or less quantity of this substance determines the greater or less intensity in the color of the Lake resulting from it. In operating on a large scale, the whole of the alkaline liquor judged necessary, after a few trials, to decompose the quantity of Alum intended to be employed, may be divided into three or four separate portions. As many cloth filters as there are alkaline portions, being then prepared, the first portion of alkaline liquor is poured out, and the colored precipitate resulting from it is received on one of the filters; the colored liquor which passes through the filter, receives the second portion of alkaline liquor, and the latter produces a second precipitate, which is received on a new filter; this operation is to be continued till the last portion of alkaline liquor has been employed. The Lakes deposited on the filters are washed in warm water, and when they have drained, they are carried, along with their filters, to the chalk driers. The first precipitation gives a Carminated Lake of a very high color, the second is somewhat lighter, and the rest go on decreasing in the same manner. By these means the Artist obtains, from the same solution, various shades of color, which are much mellower and more delicate than those resulting from a mechanical mixture of white clay in different proportions, as Lake saturated with color by one operation. Carminated Lake may be obtained by extracting the coloring matter from any substance impregnated with Cochineal, (as the shavings of scarlet cloth,) by a certain chemical process, which the limits of this work will not allow me to give. Lakes, in which the coloring matter differs from that of Cochineal, are called false Carminated Lakes, and are mostly obtained from Madder and Brazil Wood, but that obtained from the root of Madder is the best.

CARMINATED LAKE FROM MADDER.—Madder Lake may be obtained by boiling one part of Madder in from twelve to fifteen parts of water, till it be reduced to two parts, then strain the decoction through a piece of strong linen cloth, which must be well

squeezed, and add to the decoction four ounces of Alum. The tint is then a beautiful bright Red, which the matter will retain if it be mixed with proper clay. In this case, expose the thick liquid which is thus produced, on a linen filter, and subject it to one washing, to remove the Alum. The Lake, when taken from the driers, will retain the bright primitive color given by the Alum. Carminated Lakes vary in their shades of color, from a Scarlet to a bright and delicate Purple Red, and is sold in small cakes nearly in the form of a top thimble. For farther information on Carminated Lakes, see TINGRY ON THE PREPARATION OF COLORS.

YELLOWS.

CHROME YELLOW, or CHROMATE OF LEAD, was for some time, on the account of its scarcity and high price, confined to the use of Portrait Painting, but is now extensively used both in Carriage and House Painting. When pure, it is a beautiful Yellow color, approaching an Orange tint, and, as a Paint, possesses so much body, that one pound will go as far as four pounds of Patent Yellow. It is apt to be adulterated with White Lead or Patent Yellow, in which case it loses its intensity of color, and adds both to its weight and hardness. If, therefore, the ease of the operator and the profit and durability of the pigment is to be considered, care should be taken to select a good article.

Vanherman gives the following method of preparing this substance: "To one pound of Chromate of Iron, dissolved in two gallons of warm water, add two pounds of White Lead ground in water; mix these ingredients well, and add one pound of Sugar of Lead, stir the whole and suffer it to precipitate, when you will obtain a deep yellow, which may be put in the filter and afterwards dried."

PATENT YELLOW, or MONTPELIER YELLOW, is a compound of Oxide and Chloride of Lead, and is made by submitting Litharge and common Salt, in certain proportions, to the action of an intense fire in suitable crucibles. Patent Yellow is a solid, yellow, brilliant matter, sometimes chrystalized in transverse striæ, and was formerly much used, but has been latterly in a great measure superseded by Chrome Yellow.

YELLOW OCHRES.—The natural Yellow Ochres are produced in all countries in the neighborhood of volcanoes, and in some no evidence of volcanic procedure exists. They are known to Painters under various names, as, Dutch or Spruce Ochre, English Ochre, French Yellow, &c. That sold under the name of French Yellow, in this country, is generally considered the best.

GREENS.

THE Greens that are now principally used, are, Chrome Green, Saxony Green, Acetate and Subacetate of Copper.

CHROME GREEN.—This article is getting to be extensively used in Carriage and other kinds of Painting, and is sold in the form of powder. It is a fine grass Green. The process of obtaining it is not generally known.

SAXONY GREEN, is an earth produced in Saxony, Hungary, and Italy. Its color depends chiefly on the Oxide of Iron or the Oxide of Copper it contains. The Paint sold in this country under the name of Saxony Green, is a yellowish Green powder, and requires but little labor in grinding. It answers well for the bodies of Carriages, House Painting, &c. A darker shade may be given to it by the addition of Prussian Blue.

VERDIGRIS, or SUBACETATE OF COPPER.—Verdigris, is a bluish Green substance manufactured chiefly in the south of France, at Montpelier, and in the environs of that city. It is made by spreading the husks and stalks of grapes, after the juice is expressed from them for wine, upon plates of Copper in jars. The acetic acid which is produced in the husks, &c., by their being moistened and having the acetous fermentation excited in them, combines with the Copper, and converts the surface of the plates into a green rust. This rust is scraped off, as is the Verdigris in the shops, which is brought to this country in leathern bags of various sizes, from ten to twenty pounds each. This Paint has so many inconveniences attending its use, (it being a poisonous substance and exceedingly difficult to grind, as well as of a dull muddy color without taking much pains to correct it,) that it is mostly laid aside. It is not fit for Carriage, Sign, or Ornamental Painting.

DISTILLED VERDIGRIS, or ACETATE OF COPPER.—This Paint is obtained by digesting Verdigris in acetic acid, and by evaporating the solution it will be found in green prismatic crystals. If this Paint is to be ground in oil, it must first be deprived of its water of crystalization. This is accomplished by first reducing it to powder and exposing it to the sun or heat of the fire. This Paint is used chiefly to give a green shade to gold, silver, and other metals.

BROWNS.

UMBER.—This pigment is sold at the shops under the names of Turkey Umber and English Umber. It is found in Umbria, a district in Italy, whence it derives its name. But the best comes from the island of Cyprus, where it occurs in beds, and is sold under the name of Turkey Umber. Its color is a clove Brown. It is brought into this country in lumps of various sizes, and some almost reduced to a powder. It is soft, easily cut, and readily falls to pieces in water. When burnt, it acquires a more intense color, and in this state it is generally used. Some Umber, when the lumps are

broken, exhibits light colored streaks, which prove to be thin lamina, of a hard stone-like substance, possessing no coloring quality, and altogether unmanageable under the muller. Umber the most free from these streaks or lamina, is the best, and if possible, should be procured entirely free.

TERRA DE SIENNA, is an Ochre of an Orange-colored hue, brought from Sienna, in Italy, and used for Painting, both in its crude and burnt state. Its principal use is for shading metals, and graining in imitation of Mahogany.

SPANISH BROWN, is an Ochre of a reddish Brown color, and is produced in many parts of the world. It is only fit for the coarsest kinds of Painting.

LITHARGE, is obtained on a large scale at the Lead Works, by causing streams of air from powerful bellowses to be poured on melted Lead, the surface of which is immediately converted into Litharge, that is at once blown off by a blast of air. The color of Litharge varies; but the best is in shining scales of a reddish hue, and is, if pure, wholly soluble in Olive, Linseed, and other expressed Oils—in a small quantity, by being merely mixed with them and occasionally shaken, but in large quantities by being boiled at once with them. This article is used in Painting as a drier, being sometimes ground in oil and mixed with the colors; it is, however, generally boiled with Linseed Oil to render it more disposed to dry.

ON THE COMPOSITION OF COLORS.

HAVING in the preceding chapter given a short descriptive account of the principal coloring substances that are now used in Carriage and Ornamental Painting, we are now in a condition to show how they are to be COMPOUNDED, to form certain shades of color. The coloring substances mentioned in the former chapter, are capable, if properly compounded, of giving every shade of color of which we can imagine.

CREAM COLOR.

To every half pound of White Lead, add as much Chrome Yellow in powder, as will fill a middling sized top thimble; mix and grind them together in Linseed or Nut Oil. Oil not stained in being prepared should be used. A darker shade may be given by adding a third more Chrome Yellow, or a lighter shade by adding more White Lead.

STRAW COLOR.

To one pound of White Lead add two ounces of Chrome Yellow; mix and grind them together, as above.

ORANGE COLOR.

To one pound of Chrome Yellow, add one pound of Red Lead; mix and grind them together. If the color should prove too dark, more White Lead may be added.

DRAB COLOR.

To one pound of White Lead add as much burnt Umber in powder, as will fill a common sized top thimble. The Umber is first to be thoroughly ground in oil, when the White Lead and the requisite quantity of Oil is to be added, and then all ground together. A darker shade may be given by adding one-third or one-half more Umber.

SEA GREEN.

To one pound of White Lead add as much Chrome Green as may be put into a top thimble; mix them together. A yellow shade may be given to this composition by adding half as much Chrome Yellow as it contains Chrome Green.

GREEN FOR CARRIAGES, &c.

To one pound of White Lead add one-fourth pound Chrome Green. The Green is first to be ground in oil, when the White Lead, and the necessary quantity of Oil to give the Paint a proper consistence for grinding, is to be added, and then all is to be ground together. A yellow shade may be given to it by a small addition of Chrome Yellow.

GREEN FROM PRUSSIAN BLUE AND CHROME YELLOW.

To one ounce of Prussian Blue add three ounces Chrome Yellow. The Prussian Blue is first to be ground in oil; then add the Chrome Yellow, with the necessary quantity of Oil to give the Paint a proper consistence for grinding, and then grind all together. There is one difficulty attending this Green, as the colors are liable to separate in the process of drying, which makes the work appear spotted. This will be less liable to take place if one half pound of White Lead be added with the Chrome Yellow.

SKY BLUE.

To two pounds of White Lead add one ounce Prussian Blue. The Blue is first to be well ground in oil, and then all together. If a darker shade is desired, more Prussian Blue may be added; but it should be ground separate and all thoroughly mixed together, either under the muller or by stirring after the Paint is removed into the pot. If a lighter shade is desired, more White Lead may be added and all ground together.

PEARL WHITE.

To one pound of White Lead add a lump of Prussian Blue about the size of a large pea. The Blue should first be ground on the stone in oil, when the White Lead and the requisite quantity of Oil are to be added, and then all ground together.

FLESH COLOR.

To one pound of White Lead add as much Vermilion as may be contained in a common sized top thimble; mix and grind them together. If too dark, add more White Lead.

LEAD COLOR.

ADD as much Lamp Black or Patent Black, in powder, as a middling size top thimble will hold, to every half pound of White Lead; mix and grind them together.

If a darker shade is desired, the Black should be added with caution, as an addition of a small quantity of Black has a great influence on this color. By adding three times the quantity of Black, you will have a dark Lead Color.

CHOCOLATE COLOR.

To one pound and a half of Venitian Red add one ounce of Lamp Black. The Venitian Red should be well ground in oil, first, when the Lamp Black is to be added, and all ground together.

IMITATION OF UMBER.

To one pound of Venitian Red add one ounce of Lamp Black, and one half ounce of Chrome Yellow; mix up and grind the Venitian Red and Chrome Yellow together, then add the Lamp Black and the necessary quantity of Oil to give the whole the proper consistence for grinding, and grind all together. If a darker shade is wanted, more Lamp Black may be added.

OLIVE GREEN.

To four ounces Chrome Yellow add one ounce of burnt Umber. The Umber is first to be well ground in oil, when the Chrome Yellow and more Oil is to be added, and all ground together. The shades of this color may be varied to suit the taste of the operator or employer.

BOTTLE GREEN.

To four ounces of Chrome Green add one ounce Lamp Black. The Chrome Green is to be ground separate in oil. The Lamp Black and more Oil is then to be added, and all ground together.

VIOLET COLOR.

To one ounce of Vermilion add one half ounce of Prussian Blue. The Blue is first to be ground in oil, the Vermilion is then to be added, and all ground together. A more delicate Violet Color may be made by compounding Crimson Lake with Prussian Blue in nearly the same proportions.

Much more may be learned of the Composition of Colors in a course of experience in the Art, than is contained in this chapter. Different materials may be used to form nearly the same shades of color. For instance: Red Lead, and even Venitian Red, may be substituted for Vermilion, in forming Flesh Color; White Lead and the Yellow Ochres form an indifferent Straw Color, &c. Enough, however, is contained in this chapter to answer the purpose of ordinary Carriage, Sign, and Ornamental Painting.

OF OILS USED IN PAINTING.

THE Oils used in Painting, are, Linseed Oil, Nut Oil, and Oil obtained from the Seeds of the White Poppy.

OIL FROM WHITE POPPY SEEDS.

THE Seeds of the single White Poppy, an annular plant, a native of Asia, but now found in most of the southern parts of Europe and in some other countries, yield, by being bruised and pressed, a large quantity of a sweet unctuous Oil, which is used for delicate Painting, it being nearly colorless. This Oil acquires a drying quality by age alone.

NUT OIL.

NUT OIL, is obtained from the kernels of several kinds of Nuts, chiefly from Walnuts or Hazel Nuts, by contusion and expression, either with or without heat. That obtained with heat, is the more proper for the Painter; but in this country Nut Oil is not a common vehicle, and if sold as such, there is much reason to fear that other Oils supply its place. It is, nevertheless, a very useful Oil, and when to be obtained, is to be preferred to Linseed Oil. A similar Oil may be obtained from Beech Nuts, also from Hemp-seed.

LINSEED OIL.

THE Oil obtained from the Seed of the linum usitatissimum, or Flax plant, an annual, cultivated in almost every part of Europe, and in this country, is the most common vehicle for colors for ordinary Painting. It is abstracted from the Seed by contusion and expression, for medical use, without, but for the Painter, with the aid of considerable heat. Old Linseed Oil is to be preferred to that newly made.

ON IMPARTING A DRYING QUALITY TO LINSEED AND NUT OIL.

THESE Oils, in their natural state, dry too slow for the convenience of Painting, except in some cases of out-door work, as the Painting of the outside of buildings; and

especially if White Lead be used, the first coat should be mixed up with raw Oil; but in Carriage and most other kinds of Painting, the Paint is required to dry in the space of a few hours. This object is effected by adding to the Oil certain materials called driers, and submitting it to certain degrees of heat over the fire. The materials mostly used for this purpose, are, Litharge, Red Lead, and burnt Umber.

FIRST PROCESS FOR IMPARTING A DRYING QUALITY TO LINSEED AND NUT OIL.

To one gallon of Linseed Oil add four ounces of Red Lead, four ounces of Litharge, and one ounce of burnt Umber, in powder. The Oil is first to be poured into an iron, brass, or copper kettle, when the materials are to be added, observing to stir the Oil and driers together until they are well mixed. The vessel is then to be placed over a fire made of charcoal in a common air furnace, or such an one as is commonly used in most of the kitchens in this country for the purpose of cooking, &c. If a strong heat is emitted from the burning coal, the vessel containing the Oil should be elevated eight or ten inches above the fire and there suffered to remain an hour or more, as the circumstances may require, unless the Oil, as is sometimes the case, is disposed to rise in the vessel and is in danger of running over, in which case it is to be removed from the fire until the foam has partly subsided, when it is again to be placed over the fire. One or two stirrings of the Oil after it commences boiling is sufficient. To determine the degree or quantity of heat to which the Oil is to be subjected in order to impart to it the requisite quality, is the most difficult part of the process. Some test this point by immersing the bushy end of a hog's bristle in the Oil; if the heat of the Oil is sufficient to scorch the bristle, it is to be removed from the fire. But the best evidences of the Oil having received the requisite quantity of heat, are these: The foam or scum, which at first was much colored with the Red Lead, loses its Red tint and assumes a dark Brown color; the Oil, also, loses the color given to it by the driers, and becomes dark colored, when, and especially if any appearance of smoke rises from the surface of the Oil, it should be removed from the fire. It is now to be placed in a suitable place to cool and to give the pellicle a chance to be precipitated. When the Oil becomes clear, it is to be carefully poured off from the deposit and placed in suitable bottles for that purpose.

PRECAUTIONS.—Care should be taken, to see that the heat be not too strong, in which case the Oil would be burned before a suitable length of time would be employed in heating the Oil to impart to it the drying quality desired. One hour, at least, after the Oil is placed over the fire should transpire before the appearance of the Oil be changed as mentioned above. Care should also be taken to prevent the Oil from taking

fire. If the blaze of the fire is allowed to ascend up the sides of the kettle containing the Oil, there is much danger of this evil taking place, which may occasion not only the loss of the Oil, but if boiled in-doors, the top of the shop and its contents. In case the Oil should become ignited, the most sure remedy is to throw over it woolen cloths, by which means the fire will be smothered and become extinct.

SECOND PROCESS FOR IMPARTING A DRYING QUALITY TO LINSEED OR NUT OIL.

THE above preparation renders the Oil too dark colored for light and delicate Colors. The following, if conducted with care, will impart to the Oil a drying quality without materially darkening its color.

To one gallon of Oil add one pound of the best Litharge, and stir them well together. The vessel containing the Oil is then to be placed over a slow fire made of charcoal, and subjected to a moderate heat for eight or ten hours, or until a pellicle be formed on the top of the Oil. It is then to be taken from the fire, and when cooled poured off as directed in the former process.

THIRD PROCESS FOR IMPARTING A DRYING QUALITY TO OILS.

To one pint of old Linseed Oil add three ounces of the Acetate of Lead, (Sugar of Lead,) mix and grind them together under the muller. With this preparation mix and grind your Color, to which may be added one gill of the Oil of Turpentine (Spirits of Turpentine. In this way a drying quality may be given to Linseed Oil, without materially altering its color. But it will rarely be found necessary to employ these means for obtaining a light colored drying Oil.

GUMS USED IN PAINTING.

GUM COPAL.

Gum Copal, as it is sometimes called, is an important article in the composition of Varnish. It is a hard, brittle, semi-transparent Resin. It neither dissolves in water, like the pure Gums, nor in rectified spirits of wine under ordinary circumstances, like the other Resins; in this respect it approaches the nature of Amber. That which is sometimes sold under the denomination of South American Copal, is in the form of large drops or tears, covered over with a thin whitish scaly substance, the result of a long exposure of the Resin to the action of the surrounding atmosphere, before gathered from the tree. These drops when broken, will be found light colored, and nearly as transparent as glass. This kind of copal makes an inferior Varnish, and in most cases will be found viscous or sticky, many months after put on, and is altogether unfit for most purposes of Varnishing. That sold under the name of East India Copal, is decidedly the best. It is sold in small masses of different sizes and shapes, most generally, however, in the form of irregular flat cakes of different thicknesses. It is of a yellowish White color, and less transparent than the South American Copal, not so easily broken, and free from that white scaly substance that is seen on the surface of the latter. Varnish made of this Gum dries exceedingly hard, and shows brilliantly if properly manufactured and laid on, especially when polished.

GUM SHELLAC.

Gum Shellac, is a compound resinous substance, procured from the nests or cells of an insect. It is found in the shops in the form of thin plates or lamina, and is of a reddish Brown color, somewhat elastic, but less transparent than Copal.

RESIN.

This article is too well known to need description. It is the resinous part of Turpentine, and sometimes enters into the composition of Varnish, which greatly decreases its value. Among other defects of such Varnish, is, wherever water remains any length of time on it, it will occasion white spots to appear on its surface that cannot be easily removed. All Varnish, therefore, containing this article should be rejected, especially by Carriage Painters.

PROCESS FOR MAKING COPAL VARNISH.

PUT into a copper kettle, made in the form represented below and holding from three to four gallons, two lbs. East India Copal, and place it over a brisk fire of charcoal, where it is to remain until it is all well melted. Previous, however, to placing it over the fire, the mouth of the vessel is to be covered with a lid made for that purpose, to keep the steam in and to prevent the cooling influence of the air upon the upper surface of the Gum. To ascertain when the Gum is reduced to a liquid state, an aperature is made through the lid sufficiently large to admit a wire about one-fourth of an inch in diameter to pass through with freedom. When the wire is made to pass through the Gum without any perceptible resistance, and when no particles of Gum appear on the wire on taking it from the vessel, the heat is to be continued but a few minutes longer. Immediately after it is removed from the fire, add to it one quart of boiling Oil by degrees, at the same time stirring it until they become well incorporated; allow the mixture to cool a little and add to it two quarts of Spirits of Turpentine by degrees, stirring it as before. It is now to be filtered through a linen or cotton cloth, without shaking or squeezing, into a clean vessel prepared for that purpose, and when quite cool, it is to be put into glass or stone bottles, and corked tight. It sometimes happens that all the Gum does not become sufficiently melted to admit of its being incorporated with the Oil. The consequence is, that a mass of jelly-like substance remains upon the filter. When this happens, a small quantity of Spirits of Turpentine is to be poured upon what remains, and subjected to a moderate squeezing; by which means, an inferior Varnish will be obtained, which may be bottled, and kept for the coarsest kinds of work. If the Varnish is required to dry quick, the drying quality should be given to the Oil in the usual way; but if required to dry slow, no driers should be used. If more than two or three gallons are to be made at a time, a larger kettle should be provided. If no copper kettle can be obtained, the Varnish may be made in an iron pot; it will not, however be so clear. The Art of making Copal Varnish, requires considerable practice in order to succeed well. The inexperienced often fail of obtaining good Varnish, and will generally find it to their interest to purchase it ready made at the shops, where it is extensively manufactured, if a good article can be depended on.

RESIN VARNISH.

PUT the Resin into a copper or iron kettle, and place it over a slow fire, and when thoroughly melted, add to it as much Spirits of Turpentine as will give it the proper consistence for use. This Varnish is not fit for any but the coarsest kinds of work, and should never be used in Carriage or Ornamental Painting. Water, standing upon this Varnish, will turn the color to a dirty White. Resin should not, therefore, enter into the composition of any Varnish that is liable to get wet.

SHELLAC VARNISH.

TAKE two lbs. Gum Shellac, put it into a glass bottle with three quarts of Alchohol, place the bottle in warm water, stir thoroughly until all dissolved; if not thick enough, add more Gum, if too thick, add more Alcohol, until it suits your fancy.

CARRIAGE PAINTING.

INTRODUCTORY REMARKS.

GOOD CARRIAGE PAINTING, is one of the most difficult branches of the Art, and necessarily requires not only a knowledge of the theory, but considerable practice, in order to become an adept in the business. Difficult, however, as it is, if a strict attention be paid to the rules and precautions given in this work by one possessing a talent for the business, he will soon be able to do very good work. Although this work does not contain all the different methods practised by different Carriage Painters, yet nothing is left out, which the Author deems to be useful to that class of individuals for whose benefit this book is written. It is a great fault in books hitherto written on the subject of Painting, that many different methods are given for doing the same kinds of work, most of which, having become antiquated, have long since been laid aside, as useless to the modern Painter. A person having but a limited knowledge of the Art of Painting, finding all these different methods highly recommended by the Author, (who, by the way, is no Painter,) makes one or two experiments, and, being disappointed in the result, becomes perplexed and disheartened. The Author of this work, having had a practical acquaintance with the system of Carriage Painting, confidently expects all the benefit will be derived from his work, it pretends to give.

A Carriage Painter should not only look well to the quality of his Paints and Oils, but should provide himself with proper tools, and a convenient shop and yard, or scaffold, or both. Without these, the best of Painters can do but indifferent work; much less can the inexperienced hope to succeed in the business, to their own wishes, or that of their patrons, without them.

SHOP.

A CONVENIENT Shop and Yard, are very essential to Carriage Painting. Lumber Wagons and Sleighs should never be painted in the streets, much less, pleasure Carriages; a judicious, experienced Painter, will never attempt it. Children, dust, flies, and swine, are sore evils to the Painter, when permitted to approach his work; for this reason, work newly painted should never be placed within the limits of the highway to dry, unless placed upon an elevated scaffold. Painting, whenever it can be avoided, should never be done in the open air, especially in the sun, as it frequently occasions it to blister, and otherwise materially injures the texture of the coat. The same difficulty occurs when work is placed too near a stove or fire to dry. Carriage Painting should always

be performed within doors, and when the weather will admit of it, have a fair chance in the sun to dry, as secure from dust and flies, as possible.

A Painter's Shop should be kept as free as possible from all materials that float in the atmosphere which would occasion perceptible specks on the work, and more especially, the apartment for Varnishing. It will be found convenient to have a Shop with two apartments—one apartment for the preparation and putting on of the Colors, and one for laying on Varnish. The doors to the Shop should be made sufficiently large to admit a Carriage, without interfering with the posts, as it would save considerable trouble in taking them apart, and putting them together again, besides, it will be found more convenient to paint the wheels and gearing together. The Shop should be well lighted. The Painter who attempts to do good work without a sufficient quantity of light to detect the imperfections of his work, will, most likely, when it is brought into the full light of the sun, see, with sad disappointment, many imperfections, when it is too late to correct them, without much trouble and loss of time, as well as waste of materials. It is highly important, that about an equal quantity of light should enter the Shop from at least three sides of the room, as it would save much inconvenience and trouble in turning the work around, to catch the strongest light; besides this, it is necessary, especially in Carriage Painting, that the light should fall on all sides and parts of the work equally alike, that the Colors may give their proper shades, and it is equally important, in laying on and polishing Varnish, that all the specks and undulations may be clearly seen. Much Varnishing, when the light meets it only from one direction and falls upon it at right angles, appears smooth and faultless; but, if it be placed so as to let the rays of light fall upon it equally from every direction, specks and prominent undulations will be seen, and the work appear very imperfect.

In the cold season of the year, the Shop should be made warm. Not only the comfort and convenience of the operator require this, but it is indispensable to the drying of the Paint and Varnish; for, notwithstanding Paint will dry in very cold weather in the open air, it will not in the confined air of the Shop. It will, indeed, harden, and appear dry; but when brought near a stove or fire, it softens, and appears nearly as green as when first laid on. This caution should be observed in the preparation and application of Paint, as Linseed Oil, when rendered drying, thickens, and cannot be well laid on, without imparting sufficient warmth to bring it to its natural state of fluidity. The same precaution is to be used in laying on Varnish. If the Paint is cold over which the Varnish is to be laid, it will (to use the technical term of Painters,) CRAWL; that is, gather itself up so as to stand in small drops over the whole work. To avoid this evil, and to give the Varnish a chance to flow readily and evenly over the whole surface of the Paint, the Paint must possess sufficient warmth, so as not to convey a sense of cold

to the ends of the fingers, and not so warm as to convey a sense of heat to the inside of the hand. The Varnish should also possess a sufficient degree of warmth to keep it in its natural state of fluidity. These are among the many reasons for using this precaution; but sufficient has been said, to show the importance of keeping the air of the Shop appropriately warm.

To the Shop there should be affixed a scaffold or platform, of sufficient dimension to allow as much work to be placed upon it at a time, as will be required for the purpose of drying the Paint and Varnish. It would seem hardly necessary to say, that the platform or scaffold should be kept perfectly free from dust and all sorts of materials that would be likely to be blown into the Paint; but a Painter cannot be too particular in this matter. One gust of wind, passing across a scaffold which is covered with dust, (on which a Carriage body has been placed, to dry the Varnish,) is sufficient to spoil the work, especially if designed to be polished.

If I am deemed too particular in these precautions by any individuals, those individuals are among the many who are always attempting good work, but succeed in none. These persons have yet to learn, that one of the most important secrets of good Painting, exists in the very particular manner of keeping the Shop, Scaffold, Pots, Brushes, and every thing that appertains to the business, as free as possible from all extraneous substances.

INSTRUMENTS USED FOR THE PREPARATION AND APPLICATION OF COLORS AND VARNISH.

THE instruments used in the preparation of Colors, are extremely simple in construction, and few in number. A level, smooth Stone, generally from twenty inches to two feet square, and from two and a half to three inches thick, made flat on the bottom that it may lie steady on the table or bench, a Muller and Spatula or flexible knife, constitute all the instruments used by the Carriage Painter for the preparation of his Colors. The Muller, if round, should measure on its face, which should be perfectly level and smooth, about five inches in diameter, and about three inches across the top, its height should be about six inches. It should be of about the same dimensions if square. In using the Muller, care should be taken to wear it level on the face side. Some Mullers, especially those made of marble, are inclined to wear more on one side than on the other, and if not guarded against, will soon wear so slanting as to need new facing, or to be thrown by as useless. Much care should likewise be taken to wear the Paint Stone level. Some Painters, through carelessness or ignorance of the ill convenience of wearing the Stone hollowing in the middle, always grind their Colors upon the centre of the Stone, which soon produces a cavity in the form of an inverted cone, around which the Muller

is made to slide. If the Stone is hollow, but a small portion of the face of the Muller will come in contact with it, in consequence of which, double the labor will be required to suitably levigate the Paint; it will, also, be found much more difficult to remove the Paint from the Stone. If the Muller and Stone be level and smooth, every part of the face of the Muller will come in contact with the face of the Stone, which is very essential to a quick and complete division of the particles of the Color. To avoid wearing the Stone hollow, the Muller should be made to pass over nearly the whole surface of the slab, especially in grinding any of the Ochres. If small quantities of Paint are to be ground, they should be ground on the corners, or as near the edge of the Stone as practicable.

If through neglect to wipe the Stone clean, any portion of Paint should be left upon it and become hard, it may be removed by laying evenly over the Stone, unleached ashes, to the thickness of about one inch, and pouring on it as much water as will thoroughly saturate the ashes; but not enough to cause it to drip from the Stone. In about ten or twelve hours the ashes may be removed from the Stone, when the Paint will be found so loosened upon it, as to be easily removed, and after the Stone is cleansed with water, and dried, it will be fit for use.

The Spatula, or Paint knife, should possess the elasticity of a saw plate. As it is difficult to procure such instruments at any of the country stores, it may be found necessary to manufacture one. This may be easily done from an old hand-saw plate. It should be made from ten to twelve inches long, and, at the end next to the handle, an inch and a half wide, and at the other end about one inch, that it may be less flexible near the handle than at the other end, the object of which will be readily seen. Its use is to bring the Paint from the outer edges of the Stone, more directly under the action of the Muller, and to remove the Color, when ground, into the pot designed to receive it.

Pots.—But little need be said in reference to the Pots, or vessels into which the Paint is put after having been levigated upon the Stone, and from which it is to be used. Vessels having handles or bails to them, will be less likely to cover his hands with the Paint, one token of a slovenly and unskillful Painter. It would hardly seem necessary to say, that the Painter will find it convenient to provide himself with as many Pots as the colors he makes, as it will readily be seen, that much trouble and time will be saved in cleaning the Pots to receive the new Color.

Varnish Cups.—The Cup or vessel into which Varnish is poured, and from which it is used, requires particular care, to keep it free from dust, and every thing that would affect its color or speck the Varnish. The Varnish remaining in the Cup after using, (unless the Cup be provided with a cover that will shut sufficiently tight to keep out the air,) should be poured back into the vessel containing the Varnish, and thoroughly drained from the Cup, or it will settle at the bottom, and form into a thick, sticky substance, that must be thoroughly removed before the Cup will again be fit for use. It becomes

necessary on taking the Brush from the Cup, to prevent its dripping, and to remove the superabundance of Varnish, that a portion of it should be wiped out, in such a manner as will let the Varnish flow back into the Cup. To accomplish this, some persons wipe the brush on the edge of the vessel, a practice attended with the inconvenience of having a portion of it, at least, run down on the outside of the Cup, which will soon form so thick a coat on the outside and upper edge of the Cup, as will make it necessary to cut it away. For this reason, and on account of its rendering the vessel uncomfortable to handle, the practise of some is, to stretch a wire across the top of the Cup, a little one side from the centre, to give a chance for the Brush freely to pass to the Varnish. The ends of the wire are fastened by passing them through holes, made for that purpose, in the Cup, and so bent or twisted as to hold firm in their place.

VESSELS FOR OILS AND VARNISH.—As necessity and convenience will so readily suggest to the Artist the number and size of the vessels requisite to contain his Oils and Varnish, it will be only necessary to say, that vessels of glass, stone, tin, or sheet iron, well painted, are to be used. The Oil of Turpentine, should be kept in vessels made of glass, which should be well corked, to prevent the evaporation of the Oil.

PAINT BRUSHES.—In executing nice Painting, much depends on the quality and condition of the Brushes used. In Carriage Painting, the most convenient sizes, are, Nos. 1, 2, and 3, which numbers will be found marked upon their handles. Much care should be taken in selecting Paint Brushes, to see that the handle is not loose in the brush, and that the cord with which it is wound, is tight, and well fastened at the ends. If the handle be not tight in the brush, or the cord not well put on, the Brush will come to pieces. The handle may be made tight by placing it in water, but when it is permitted to dry, it proves to be looser than before it was wet. Such Brushes prove a damage to the buyer; for, besides the trouble of trying to keep them together, they are continually shedding loose bristles while using them, to remove which, is very perplexing, besides it is impossible to do good work with such a brush.

Ground Brushes, only, are fit for Carriage Painting; those made of the finest bristles, are the best. Brush makers, aware of this, place their finest bristles on the outside, and not unfrequently place very course, stiff, dark colored bristles in the centre. The deception may be detected by pulling the bristles apart so as to examine them above where they are ground. Brushes that have the fewest dark colored bristles in them, are generally the best.

The handles of Paint Brushes are generally too long to be convenient in painting many parts of a Carriage, and should, therefore, be cut off about one-third of their length. Care should be taken to wear the Brush flatwise. To accomplish this, the handle of the Brush should be flattened on the two opposite sides where it is held in the hand; and if upon one of these flattened sides the thumb is placed while using the brush, the object will be gained. In all new Brushes, there are more or less loose bristles, and it will be

far less trouble to remove them, as far as practicable, before the Brush is put into the Paint, than to pick or brush them off from the Paint you are putting on. A new Brush is not fit for nice Painting, but should be used about the coarsest work, until about one quarter worn, when all the loose bristles will be removed, and the Brush be suitably tempered to do good work. It will be found convenient to have as many good Brushes as the Colors you use, as it will save much trouble in washing them out, besides it will be found very difficult to wash a Color so thoroughly from the Brush as not to have some influence on the new Color it receives.

To prevent the Paint from drying in the Brush, which ought never to take place, it should be placed in water so as to be completely covered to the cord with which it is wound, and permitted to remain there, except when in use, unless it is not to be used for three or four weeks, in which case it should be washed clean, and permitted to dry; for if suffered to remain too long in the water, the cord will become rotten, and the handle, swelling at the same time, will burst the cord, and the Brush be spoiled. To prevent the cord from rotting, and at the same time prevent the glue with which the upper end of the bristles are covered from dissolving when placed in water, the cord and upper end of the Brush should receive one or two coats of Paint, before using. Brushes having in them dark colored Paints and those used for light Colors, should not be placed together in the same vessel of water, lest the light colored Brushes should become so charged with the dark colored Paint as to make it necessary to wash them, before using. The cheapest and best method of cleaning Paint Brushes, is, to work as much soft soap into the Brush as it will contain---which is to be washed out with warm water, and repeated until the Brush appears to be freed from the Paint in its centre; it is then thoroughly to be rinsed in clean water, and when dry, is fit for use. When it is not convenient to use this method, if the Color to be used is dark, or it differs but little from the Color in the Brush, the Paint in the Brush may be washed out with Spirits of Turpentine, and the Turpentine thus used may be poured into a bottle provided for that purpose, and mixed with dark Colors for coarse work. After using the Brush for some time, a thick coat of Paint will be formed on the outside and upper end of the Brush, which may be removed by taking a sharp knife and cutting off a few of the outside bristles close to the cord, with a slanting stroke. All the bristles thus cut, must be carefully removed.

Varnish Brush.---No instrument used in Carriage Painting is more difficult to obtain, and none requires more care to be kept in order, than the Varnish Brush. No Brush is fit for Varnishing, until about one-third worn in laying on Paint, when the Color is to be thoroughly washed from the Brush, and all the specks and skins of Paint are to be rinsed out with Spirits of Turpentine. The Brush should then be used for a few times, in laying on Varnish not required to appear so well as is wanted on the pannels of Carriages, or as is requisite for polishing. The Brush selected for this purpose should be made of the finest bristles, and as near of a size through the Brush, as can be obtained. The Brush marked No. 2, is of a convenient size.

To prevent the Varnish from drying in the Brush and thereby rendering it useless, instead of placing it in water, when not in use, it is to be placed in a vessel containing as much raw Linseed Oil as will cover the Brush completely to the cord, where it is to remain, except when in use. A Varnish Brush should never be put into water, as it would have a deleterious influence upon the Varnish, and if suffered to remain long in it, would cause the Varnish to granulate in the Brush, which will make it necessary to give it a thorough washing and scraping, before it will be fit for use. It is the practise of some to wash their Varnish Brush after using, but this method is attended with much trouble and loss of time, besides, a brush thus washed and left to dry, becomes stiff, and though attempted to be rendered pliable by the use of Spirits of Turpentine, it must be used some time before it is fit to be put upon a Carriage body. When the Oil in which the Varnish Brush is placed, becomes thick with the Varnish received from the Brush, or by standing, it should be poured off, and replenished with new Oil. The Oil thus poured off, may be used for coarse Painting. When the Brush is removed from the Oil for the purpose of being used, as much of the Oil as can, conveniently, should be removed from the Brush by wiping it on the edge of the vessel, and afterwards working it on a clean board, when it is to be put into the Varnish and well stirred, that the Oil remaining in the Brush may be thoroughly incorporated with the Varnish. It is a better method to keep the Brush immersed in Varnish, if the Varnish, at the same time, can be shut out from the air and dust, and the Brush be not allowed to rest on the bottom of the vessel. If the Brush is permitted to rest on the bottom of the vessel, the Varnish will harden around it, and the ends of the bristles will be found firmly stuck together, to remove which will require some trouble. Where a number of gallons of Varnish are contained in a large can, tightly covered, the Brush may be suspended by a small cord, so as to allow as much of it as is necessary, to be immersed in the Varnish, in which condition it will keep well, and be always fit for use. The same precaution should be used to wear the Varnish Brush flatwise, as are given in relation to Paint Brushes.

Dusting Brush.—Every Carriage Painter should provide himself with a Dusting Brush, for the purpose of brushing from his work, dust, flies, &c., that may chance to light upon it. An unground Paint Brush, marked No. 1, or larger, will be found convenient for this purpose.

Wash Leather.—Buck Skin, or Chamois Leather, is an important article in Carriage Painting. Its size should be from eight to twelve inches square. Its use will be given when treating upon those cases demanding it.

PREPARATION OF COLORS.

One of the most essential points to be observed in the preparation of a Color, is, the extreme division of its parts. The Artist who attends to the profit arising from his

labor, will soon be made sensible of this precept; for use will teach him, that a Color becomes most profitable when it is reduced to the utmost possible state of division. He will not, therefore, consider the time which he employs in the operation as misspent. The minute division of Colors, is one of the principal causes of their beauty, and of the mellowness of their tones. The touch, sight, and hearing, concur to determine the sufficiency of this division. We can readily perceive, that a Color grinds more easily at the commencement than at the end of the operation—the granular parts roll with greater freedom under the Muller than when they are more attenuated; this arises, most probably, from the air being admitted under the Muller more readily at the beginning of the operation than at its conclusion. The perfection of this operation, and the speediness of its execution, depend very much on the quantity of the Paint subjected each time to the action of the Muller. There is, it is true, no fixed rule in regard to this point, but those who should presume that the process would be expedited by employing a large quantity, would mistake. It depends on the extent of the Stone, the length and strength of the workman's arms, and, consequently, the greater or less difficulty he may find in keeping the Muller in continual motion. When heavy matters, such as those obtained from metallic bodies, are ground, as Red Lead, White Lead, Chrome Yellow, &c., from eight to twelve ounces will be sufficient.

The Color should be mixed upon the Stone with Linseed Oil. A small addition of the Spirits of Turpentine, will cause the Muller to slide more easily, and help to facilitate the division of the parts of the Color. The Paint should be mixed to the consistence of thick cream. Care should be taken not to make it too liquid, as it would run upon the Stone, and occasion much difficulty in keeping it in a manageable condition, besides, notwithstanding a too liquid consistence is less fatiguing, the process is not so soon accomplished. On the other hand, it will be more rapid as the consistence of the matter is thicker; hence, time is gained at the expense of a little more fatigue. Two or three trials will indicate the proper consistence which should be given to the matter, to render the operation at once easy and expeditious. Sometimes, in the progress of the operation, the addition of more Oil becomes necessary to facilitate the process, and to impart to the Paint a proper consistence.

In preparing a compound Color, where one of the ingredients grinds harder than the others, the ingredient most difficult to grind, should be mixed and be well levigated under the Muller before the other Colors are added. They should, however, be mixed and ground together, as they will in this way be more thoroughly compounded than can be done after the Colors are removed from the Stone. If, after the Colors are well levigated together, the shade does not suit, a small addition of the Color desired to give the shade wanted, may be ground separate upon one corner of the Stone, and then all ground together. If more Paint is wanted than can be conveniently ground upon the Stone at one time, after the first is removed a second operation must be gone through as above directed, and all put together and thoroughly mixed in the Pot.

In grinding a compound Color, too much pains cannot be taken to effect the greatest possible division of the parts, especially if designed for good work; otherwise, the coarser particles, projecting out from the body in rubbing down, will be divided, and, of course, will be the color of one of the ingredients, perhaps Red, and will cause the work to appear spotted, much to the mortification of the operator, and to the dislike of the employer and purchaser.

After grinding, the Paint is to be removed from the Stone with the Spatula. After all the Paint is removed that can conveniently be in this way, a small quantity of the Spirits of Turpentine may be poured on the Stone, and the Muller made to pass over it a few times, to incorporate the Turpentine with the remaining Paint upon the Stone. It is then to be removed into the Pot containing the Color ground. All the matter still remaining upon the Stone, Muller, and Knife, is to be wiped off with a cloth kept for this purpose. Much pains ought to be taken to keep the instruments used for the preparation of Colors, as free from Paint as possible, when not in use. The practise of some, in cleaning the Stone with shavings, saw dust, &c., is very bad. Nothing like shavings or saw dust, should be admitted into a Paint Shop. The Shop should be kept as free from all such materials, as possible.

After a sufficient quantity of Paint is ground, and removed from the Stone into the Pot designed to receive the Color, the next process is to mix up the Color. In doing this, care should be taken that it is not mixed too thin. If it should prove to be too thin, more coloring matter must be added, which will submit the operator to the inconvenience of grinding more Paint than necessary to answer his design, and to a probable loss of materials. To avoid this, the liquids should be added by degrees, stirring the materials well together until they become thoroughly mixed. The Paint should be mixed to that consistence as will permit it to run freely from the Brush when raised perpendicularly out of the Paint, but when held horizontally, will not suffer it to drip. These cautions are unnecessary, save to those who are unaccustomed to mix up Colors. It is very difficult to give precise rules for mixing up Paint, as it regards its fluidity, but, with the above hints, a little practise will enable the operator to determine very correctly the proper fluidity of his Paint. It should be so thick, as not to run down after laid on, and sufficiently thin to flow freely from the Brush, to prevent the Paint lying in ridges, a fault always to be guarded against.

The Paint for Carriages which are to receive one or more coats of Varnish, should be mixed up with two parts Linseed Oil, and one part Spirits of Turpentine; but if by this mixture a gloss is given to the work, more Spirits of Turpentine may be added, but no more should be used than is sufficient to destroy the gloss given to the Paint by the Linseed Oil.

The Paint for Priming, should be mixed up wholly with Linseed Oil, or with but a small addition of Spirits of Turpentine.

In mixing up Paint for Lumber Wagons or Sleighs, but little or no Turpentine should be used, unless a coat of Varnish is to be given them.

It sometimes happens that a piece of work is required to be performed sooner than can be accomplished with the above mixtures, as they would not dry in time. In such cases, the Color may be mixed up with Shellac Varnish, adding as much Turpentine as will cause the Paint to spread freely under the Brush. Some practise putting more or less Japan or Shellac Varnish, (by some called lacers,) into all their Paints, for the purpose of having them dry sooner. But, to say nothing about the other defects of this practise, the Paint cannot be so well laid on when rendered too drying, as it stiffens under the Brush, and cannot be spread so even and smooth, as Paint that dries more slowly. When good work is attempted, care should be taken to see that the Paint is not rendered so drying as perceptibly to thicken, until sufficient time is had to lay on the Paint, and the minute undulations which follow the Brush have a chance to flow together, so as not to appear ridged. In concluding this article, I would say, many things may be learned in the practise of preparing Colors, which are not here noticed, and which only can be learned by experience.

PRELIMINARY ARRANGEMENTS FOR PAINTING AND VARNISHING CARRIAGE BODIES.

It will be found inconvenient to paint a Carriage Body lying upon the floor, as it would be too low to paint with ease, besides, it would be much exposed to dust and bruises. A bench should therefore be procured, which may be from sixteen to twenty inches high and about three feet square. It may be made by taking four square pieces of wood of the requisite height, and nailing strips of inch boards, from eight to ten inches wide, around the sides and even with the top ends of the square sticks, in such a manner as to be quite level on the top. This is is a cheap way of making such a bench, and answers a very good purpose.

The workman, having provided himself with a bench of the above description, is carefully to turn the Carriage Body bottom side up, and on the bottom side he is to tack lightly and with care, but sufficiently strong to answer the desired purpose, two strips of wood about three quarters of an inch thick and from two to three inches wide, and of sufficient length to allow their ends to project out from the body, sixteen inches on both sides. The strips should be placed from two to three feet apart, as the length of the body may require, in such a manner as to have the centre of the body equidistant from them or so placed as to allow the body to rest with equal weight upon the two strips. By the projecting ends of these sticks or levers, the body is to be lifted and moved about. The body is likewise to rest on one end of these strips while the other side is raised for the purpose of rendering it more convenient for painting, or to give it a better opportunity for receiving the rays of the sun when placed on the scaffold to dry. The body is now to be placed on the bench and all the dust upon it brushed off, when it is to receive a coat of Priming.

PRIMING.—White Lead is the principal pigment used in Priming, as it more readily fills up the pores and hides the grain of the wood than most other kinds of Paint. If the Color to be given to the body, is dark, as Green, Chocolate, Umber, &c., as much Lamp Black should be added, as will form a Slate Color; but, if the Color is light, as Flesh, Cream or Straw Color, as much Red should be added, as will form a Flesh Color. Much pains should be taken in preparing the Color and laying on the first coat of Priming. Some Carriage Makers and others, who sometimes undertake the business of Carriage Painting, I conclude, think that it makes but little difference, with what and how, their work is Primed; for they sometimes take the settlings of old Paint, and Paint half ground or not ground at all, and, with a Brush surcharged with this, (which is quite thick, withal,) cover the wood, without taking any pains to lay it smooth, and leave it to dry in ridges, and quite as rough as sand paper. But, if the operator wishes to do good work, he must begin well. The Paint for Priming, should be well levigated under the Muller, and mixed up with a sufficient quantity of Linseed Oil, and a small addition of Spirits of Turpentine, to render it quite thin, and put on not so freely as will cause it to run down after the Brush leaves it. Care should be taken to lay on the first coat of Priming smooth, and when practicable, to draw the last strokes of the Brush with the grain of the wood. The first coat of Priming should extend to every part of the work, observing that the parts under the raves, and all the corners, are well covered. The Paint should now have a fair chance to dry and become hard, before another coat is given to the body, as the work will be less liable to crack.

The number of coats of Priming that are to be given to the body, are to be determined by the style of the work attempted by the operator. If the Carriage is to be cheaply painted, one coat of Priming is sufficient. But if the price for painting, or the quality of the work to be painted, will not admit of its being polished, but is to be painted and varnished so as to appear well, from two to three coats should be laid on; but if it is to be polished, from four to five coats are necessary.

MEASURES PREPARATORY TO THE SECOND COAT OF PRIMING.—When the first coat of Priming is dry, every part of it is to be rubbed down with sand paper, and if the frame of the body should be so shrunk as to allow the ends of the pins with which it is fastened together to project out from the surface of the frame, they should be cut off so as to be level with the surface of the wood into which they are driven, together with all accidental prominences, occasioned by whatever means. If the grain of the wood should be raised so as to appear prominent, it should be rubbed down with a proper tool for that purpose.

The proper means having been taken to get, as near as possible, an even surface upon the body, by removing all accidental prominences, the next process is, to fill up all the depressions or holes caused by the sinking of nails or screw heads into the wood or by any other means, with putty. Newly made putty is not fit for this purpose, as it

shrinks in hardening, leaving a cavity to be filled up with a new addition of putty, or else this part of the work will appear defective. Putty that has been manufactured at least one week, and which has been subjected to a second kneading to render it sufficiently pliable for use, should be employed. With this material, all the cavities or holes are to be filled, by the aid of a proper instrument for that purpose, so as to form an even surface with the coat of Priming. This having been done, and the putty had some time to harden, the dust is to be brushed from the body, when it is ready to receive the second coat of Priming.

SECOND COAT OF PRIMING.—The Paint for the second coat of Priming, is to be prepared in the same manner as the first, excepting the addition of more Turpentine. The Paint for the second coat, should be mixed up with two parts Linseed Oil, and one part Spirits of Turpentine, and put on in accordance with the directions given for laying on the first coat.

These rules are to be observed in preparing and laying on all the subsequent coats of Priming, observing to give each coat a fair chance to dry before the next is laid on.

RUB-STUFF.—After having laid on the requisite number of coats of Priming, if the work is to be polished, the next process is, to give the body three or four coats of what some Painters call "Rub-stuff," others, "Rough-stuff." This article is prepared in the following manner:

Reduce Shellac Varnish (by some called Japan,) with the Oil of Turpentine, until no gloss remains when dry; with this liquid mix as much Yellow Ochre* as will form a thin Paint, which is to be laid on without being ground. If Shellac Varnish is not to be obtained, Copal Varnish may be substituted, which is to be reduced in the same manner as the Shellac Varnish. Care should, however, be taken, not to reduce the Varnish too much, as the Rub-stuff would not dry sufficiently hard to answer the desired purpose.†

This preparation is to be applied to the parts of the Carriage designed to be polished, in the usual way of laying on Paint, excepting, it is to be laid on more freely, and yet not so much so as to allow it to run down and dry in ridges. When this coat is dry, another coat is to be given in like manner, and so on until three or four coats are laid on, when it is to be allowed to stay a number of days, to dry and become hard.

When the last coat is laid on, and the Rub-stuff has had a sufficient time to harden, the next process is to rub it down. To accomplish this, the operator is to provide himself with a piece of pomice stone of a convenient size, a suitable sponge, wash leather, and a vessel of water. This being done, the work is to be placed in the

* The Ochre used, is to be obtained as free from grit as possible.

† In reducing Varnish for preparing Rub-stuff, no precise rule can be given, as the Varnish, whether Copal or Shellac, varies considerably in its composition. The skill and judgment of the operator must herefore determine this point.

same position as is required for painting the body, when the part designed to be rubbed, is to be wet with the sponge, filled with water for that purpose. The operator will next proceed with the pomice stone, one side of which should be nearly level, to rub down the Paint, by causing the stone to pass quickly and with considerable force over every part of the work having received the coats of Rub-stuff, observing to keep the work quite wet, which may be accomplished by frequently immersing the pomice stone in water. The work should be frequently washed off, to ascertain the progress of the grinding. When any part is rubbed through to the Priming, the operation should proceed with caution, lest it also be rubbed through, and the water cause the grains of the wood to swell so as to appear prominent, and the work thereby be rendered imperfect. When every part of the work appears to be rendered smooth, it is to be washed with a sponge, and wiped dry with the wash leather, which has been previously dampened, when, if the work appears level and smooth, it is ready to receive a coat of Color. But if there still remains any cavities not completely filled, these places may receive one or two additional coats of Rub-stuff, and be rubbed down as before.

The object of the above operation, is to fill up all the depressions occasioned by the strokes of the plane or hammer, or by any other means, so as to produce a level, smooth surface, a precaution indispensable to good Carriage Painting.

PRECEPTS FOR THE PREPARATION AND APPLICATION OF THE COLORS.

After the work has been prepared as above directed, the workman is next to proceed to prepare and lay on his color. In grinding his Color for this purpose, he is to labor to effect the greatest possible division of parts, especially if he is to make a compound Color, else, in rubbing down the Varnish, the coarser granular particles of the Paint will be rubbed off, which, being of the color of one of the parts, (perhaps Red,) will cause the work to appear spotted, a sufficient defect to destroy the beauty of the Color; besides, the Varnish will not flow so smoothly and evenly over the work, as it would if the Paint had been properly levigated under the Muller. After the Paint is ground, it is to be mixed up with two parts Linseed Oil and one part Spirits of Turpentine.

The workman will next proceed to lay on his Color, two or three coats of which will be sufficient, if the Color is opaque, as Chocolate, Chrome Green, &c., but if light, as Cream and Flesh Color, from four to six coats will be required. The eye of the workman can easily determine this point. A sufficient number of coats should be laid on, as will cause the Color to give its own appropriate and uniform shade. Beauty of color is the only object to be obtained by these last coats of Paint, the grain of the wood having previously been hid, and the wood substantially guarded against the influence of the weather by the subsequent coats of Priming and Rub-stuff.

Beauty of color being sought for, the Paint should be kept as free as possible from all foreign substances, as they would more or less influence the color. In accomplishing

this, the workman should look well to the condition of his Pot and Brush. Pains should be taken, not only to cleanse the Pot and Brush from all foreign Colors, but from all materials that would serve to spot the Color. This precaution is more particularly necessary in the application of light colored Paints.

The preliminary arrangements having been made, the workman is to proceed to spread thinly and evenly over the work the Color designed to be given to the Carriage, observing (when practicable,) to draw the last strokes of the Brush with the grain of the wood. When this coat is dry, it is to be rubbed down with very fine sand paper; the work is then to be brushed off, and a second coat given to it in the same manner as the first, which is also to be rubbed down in the same way, and so on until the last coat is laid on, which is not to be rubbed down with sand paper, but to be brushed off as before, when it is ready to receive a coat of Varnish.

ON VARNISHING CARRIAGES DESIGNED TO BE POLISHED.

VARNISH for Carriages designed to be Polished, should be made of the best East India Copal, and should be so manufactured as will cause it to dry slow, that the undulations occasioned by the strokes of the Brush, may have a fair chance to flow together before the Varnish becomes set, an evil consequent on Varnishes that dry quick. Varnish selected for this purpose should be of the proper consistence, and in no case should be reduced by the addition of Spirits of Turpentine near the time of using, because it would not become sufficiently incorporated with the Varnish, as not materially to injure its appearance. Varnish for this purpose should be used quite thick, and should be of sufficient age to impart to it pliability and smoothness, or some method must be resorted to, to impart to it these qualities, or the workman labors in vain. If the Varnish is new, and, withal, too thin, it should be put into a flask or tin vessel, fitted up for this purpose and exposed to the rays of the sun for eight or ten days, when, under ordinary circumstances it will be fit for use. A small tin pail, made with a cover that will shut tight, answers well for this purpose. If the color of the Carriage is to be light, light-colored Varnish should be used; but if the color of the Carriage is to be dark, dark-colored Varnish is preferable. It will not, however, do to darken the Varnish with dark-colored Paints, as it would materially effect its brilliancy, the principal object sought for in the application of Varnish.

The Varnish should be laid on within doors, with all the windows and doors closed to prevent all unnecessary circulation of air in the apartment; because, first, a free circulation of air would hasten the evaporation of the Oil of Turpentine contained in the Varnish, which would occasion it to thicken before a sufficient time is had to lay it on. It is to be desired (were it possible,) that no alteration should take place in the consistence of the Varnish after it leaves the Cup until it is left by the last strokes of the Brush, when the minute undulations would readily flow together, forming an even

brilliant surface. Secondly, a current of air passing through the room from an open window or door, would, probably, bring with it a sufficient quantity of dust and flies to materially injure the work.

To prevent the dust rising from the floor of the room, it may be wet by sprinkling water over it and sweeping, an hour or two before laying on the Varnish. The body is to be placed in the same position as for painting and brushed off with the duster, when the workman, having provided himself with a suitable Brush, is to proceed to lay on the Varnish, freely and evenly over the whole surface of the work, observing, as in Painting, to draw the last strokes of the Brush with the grain of the wood.

Notwithstanding the Varnish is to be freely applied, as above directed, care should be taken not to lay it on in such a quantity as will cause it to run down and dry in ridges, an evil, that when once committed, is not easily remedied. After the coat of Varnish is laid on, the work should be allowed to remain in the Shop until the Varnish becomes set; in other words, until it becomes sufficiently tenacious to prevent any alteration taking place in its position. It is then, if the weather and other circumstances admit of it, to be placed on the scaffold to facilitate the process of drying the Varnish. Each of the several coats of Varnish laid on, should have a sufficient opportunity to dry and become hard, before the next coat is laid on, for the important reason, to prevent the Varnish from cracking, a fault too common to Carriage Painting. To prevent this evil, so frequently and justly complained of, not only must all the coats of Paint and Varnish dry and become hard previous to the subsequent coats being laid on, but the Varnish should be free from all resinous substances that would tend to promote this difficulty; in a word nothing but the purest and best Copal Varnish should be used in Carriage Painting, unless it should be on the cheapest and coarsest kinds of work.

After the first coat of Varnish has had a sufficient opportunity to dry and become hard, the next process is, to rub it down. This is done with pomice stone, previously ground in water. The stone is first to be broken sufficiently fine to allow the particles to roll freely under the Muller, when it is to be wet up with a sufficient quantity of water to give it the consistence of thin paste, and then ground on the Stone in the usual way of grinding Paint. The grinding is to be continued until the particles of stone have the appearance of very fine sand. A small quantity of the stone thus pulverized is taken upon a piece of felt or buck-skin of a convenient size, previously wet in water, with which the Varnish is to be rubbed down by sliding it with considerable force, backward and forward, in the direction of the last strokes of the Brush. It will be found necessary during the operation, frequently to immerse the felt in water, to prevent the work from becoming dry. As much water should be used during the operation as will keep the pomice stone of the consistence of thin paste, because in this state the grinding will proceed more rapidly than it would if less water was used. In rubbing down this coat, the workman is to proceed with caution, or, ere he is aware, not only the Varnish, but the Color will be rubbed through. To avoid this evil, and to ascertain the progress

of the work, the part that has been rubbed is frequently to be washed with water. Experience, alone, can enable the operator to determine with precision the requisite amount of labor to be employed in rubbing down the Varnish; but, with the aid of the above directions, one possessing a moderate talent for the business, after one or two trials will be enabled to determine the amount of rubbing the Varnish will admit of, without interfering with the coats of Color. When the operation of rubbing the Varnish is completed, the work is to be washed with clean water and wiped dry with the wash-leather, when it is ready to receive whatever ornamental work is designed to be put on.

When the ornamental work is put on and well dried, it is to receive a second coat of Varnish, which is to be rubbed down as before, and so on, until a sufficient number of coats are laid on to receive a good polish. For this purpose from four to six coats are necessary. After the last coat is laid on, it is to be rubbed down with pomice stone ground very fine, when it is to be washed clean and wiped dry; this done, the workman is to proceed to polish the Varnish. This is done with Tripoli or rotten stone, which is first reduced to powder and wet up with water to the consistence of thick paste. A portion of this mixture is taken upon the hand, or a piece of buck-skin previously wet with water, and applied to the varnish, which is to be polished by sliding the hand backward and forward with a quick motion over every part of the work, until it is finished. To facilitate the operation, the hand or leather is frequently immersed in water, to prevent the work from becoming too dry. The rotten stone should also be frequently washed off and the varnish wiped dry, to ascertain the condition of the work. If any part of the varnish is rubbed through, the progress of the polishing is to stop, and, after the work is washed clean and wiped dry, it is to receive one or two additional coats of varnish; but if no part of the varnish is rubbed through, and all the prominences and undulations of the varnish have disappeared and the work appears smooth and shining, it is next to be rubbed over with a very thin coat of Olive Oil. This may be done by dropping the Oil upon the palm of the hand and rubbing the varnish forcibly with the hand, until every part of the work is oiled. The object of this is to cleanse the work and to heighten the polish. The Olive Oil is then to be removed, which may be done with wheat bran or flour. The bran, or flour, is taken into the hand and rubbed over the work until it has completely absorbed every particle of the Oil, when the work is to be brushed off, and the polishing completed by rubbing it with a silk handkerchief.

If very nice work is to be done, it should receive at least six coats of varnish, and after the last coat is rubbed down it should be allowed to stand a few days, to give the exterior surface of the varnish an opportunity to harden before proceeding to polish it. There is much connected with the art of polishing varnish that can only be learned by experience, and if the operator should not succeed to his wishes upon the first and second

trials, it will not be owing to a defect in the theory, but a want of experience. The wheels and gearing of a Carriage are seldom required to be polished. It is, however, sometimes done, but should never be attempted, unless the wood and iron work is first made even and smooth, a thing not expected, except at the best of shops. When the running part of a Carriage is to be polished, it should receive from four to five coats of Priming, each of which is to be rubbed down with sand paper; the Color is next to be laid on, after which it is to receive from four to six coats of varnish. After the last coat is laid on, it is to be rubbed down with pomice stone and water, and then polished.

TRANSFERRING PICTURES AND PLATES.

[GIVE the ground Color one coat of Varnish, and after thoroughly dry, take two ounces of fine whiting, in a fine cotton or linen cloth, and dust the place to which your plate is to be transferred; then with your duster brush it off. Lay a thin coat of Varnish, no larger than the outlines of the plate that is to be laid, and when *partly dried*, place the plate on exactly square, and when DRIED, put on three or four coats of Varnish, and the work is accomplished.] PUBLISHER.

SIGN PAINTING.

It would seem needless, after what has been said at the commencement of this work, to say, that the Author expects to benefit only that class of individuals who are not experienced in this branch of Painting, and persons who are desirous to become acquainted with the system, whose circumstances will not permit them to go through the usual course of apprenticeship. This class of individuals may be so assisted by observing the following rules, as to be able, with a little practice, to do very good work.

The rules given for shaping the different forms of letters used in Sign Painting at the present time, are mostly or entirely overlooked by a majority of Sign Painters, as is evinced by the many deformed letters seen on signs in most of the villages throughout our country. Many Sign Painters who have long been accustomed to the business, have become so familiar with the shape and proportions of the different letters, that the use of the rule and dividers are mostly laid aside; but persons unaccustomed to painting letters will find it expedient for them to trust to the rule and dividers in forming the lines and determining the distances, rather than to their imaginations, if they wish to have their letters correctly made.

ON THE PREPARATION AND APPLICATION OF THE GROUND COLOR.

In Sign Painting, but little or no Oil of Turpentine should be used in mixing up the Colors, because the action of the weather, in a little time would destroy the too slightly adhesive quality of the Paint, and cause a portion of the Color to wash down in such a manner as materially to injure the appearance of the work, and the Sign would soon become so much defaced as to render it necessary to throw it aside or to have it newly painted. The Paint should be well levigated under the Muller and mixed up with Linseed Oil. If the letters are to be Black, the ground should be White. If the letters are to be painted Yellow or Orange Color, the ground should be Chocolate, or some dark Brown. But if the letters are to be laid with gold or silver leaf and the Sign is not to be smalted, the color of the ground should be dark. For this purpose, Bottle Green, Chocolate, Umber or Black is generally preferred. If the Sign is to be smalted, the ground should be of the color of the Smalt that is to be laid on. If the ground is to be White, from three to five coats of Paint must be laid on. The Paint should be mixed

up with light-colored Oil, and laid on with a clean white Brush, otherwise, the Color will be stained or spotted so as to injure its appearance. If the color of the ground is dark, three coats will be sufficient. Each coat of ground, excepting the last, is to be rubbed down with fine sand paper.

PRELIMINARY ARRANGEMENTS TO PAINTING THE ROMAN ALPHABET.

THE most fashionable letters for Signs at the present day, are the Roman capitals, in their usual or condensed form, the Antique letter, the Gothic letter, condensed, and the Oblique letter. Ornamental letters on Signs are now rarely seen. The Roman capitals in their usual form, either with or without shading, on the account of the elegance of their appearance and distinctness of their lineations, are preferred to any others now in use, for which reason they have been the standing form of capitals in the English language for a great number of years. This form of letters is so common, and even children are so familiar with their construction, that a slight deviation from a correct form would be noticed by them. More particular directions for painting them are given in this work, therefore, than are given for painting the other forms now in use; besides, a theoretical joined with a practical knowledge of the proper method of constructing the Roman capitals, will materially aid the Artist in shaping the other forms mentioned in this work.

The instruments used for lettering Signs, are the rule, dividers, lead pencil, and the Sable or Camel hair pencil, the hairs of which should be about one inch in length. The Sable hair pencil for this purpose is generally preferred. The size of the hair pencil is to be governed by the size of the letter you design to paint. It will be found convenient to have the width of your rule made to the width of the broad stroke of the letter you design to paint. This may be quickly and easily done, and will save much time in measuring to get the width of the broad stroke, as all that would have to be done would be to place the rule in the right position, and draw two lines by sliding the pencil along the right and left lines of the rule, which would be in the place of the right and left lines of the bar or broad stroke.

The broad and fine stroke of the Roman A, should form equal angles with the upper and lower lines, otherwise it will appear extremely awkward—an unfavorable comment upon the skill of the professed Artist. To avoid this error and to save time, one end of the rule should be cut off obliquely, as below directed.

Draw two parallel lines so that the space between them shall equal the length of the letter; lay your rule square across these lines and draw a line from one to the other; next, with your dividers set to the length of the letter, place one point in the angle of the cross line with the upper line, and with the other point prick the upper line; do the same

with the lower line. To these points lay your rule, and draw a line from the upper to the lower line. Then find half the distance between the two perpendicular lines on the upper line, and mark it. Then with your dividers, set to 5-6 the width of the bar, place one point at the mark last made, and with the other point to the left, prick the upper line. Then lay your rule obliquely across the long lines, so that the right line of the rule will meet the angle of the right hand perpendicular line with the lower line, and the left line of the rule will meet the point last made on the upper line, and cut off the upper end of the rule parallel with the upper line, as represented in Example given on a subsequent page.

If the A is condensed, 1-3 or 1-2, proceed as above directed, if only 2-3 or 1-2, half the square is to be included within the two perpendicular lines. If the base of the A should be spread so as to occupy more than the square, draw the perpendicular lines accordingly, and proceed as before. Much time will also be saved in forming the W, if a rule be made for that purpose.

To make the W rule, draw the long lines as directed for making the A rule; then lay your rule square across the long lines, and draw a line from the upper to the lower line. Next, with your dividers set to 3-4 the length of the letter, place one point in the angle of the perpendicular line with the lower line, and with the other point to the right, prick the lower line. Then lay your rule obliquely across the long lines, so that the left line of the rule will meet the angle of the perpendicular line with the upper line, and the right line of the rule will meet the point on the lower line. The upper end of the rule is now to be cut off parallel with the upper long line, as represented in the Example.

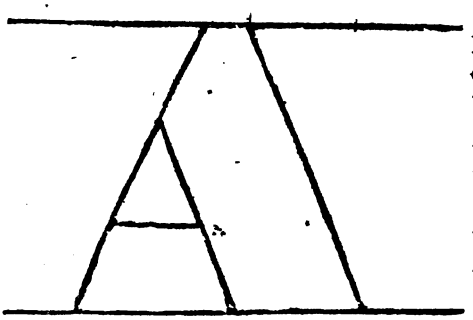
One end of the rule should be made square; or, in other words, so as to form right angles with the two opposite lines of the rule, which will materially assist the Artist in drawing the perpendicular lines, if he place the square end parallel with the upper long line, as against the moulding on the upper edge of the board.

If the ground on which the letters are to be painted is WHITE, the lines should be drawn (or scratched) with the point of the dividers, or pen-knife; as marks made with a lead pencil would be seen unless the sign was placed at a considerable distance from us. But when the ground is dark colored, or the sign is to be smalted, the lead pencil should be used.

The width of the Bar (or broad stroke of the Roman capitals) may be varied a little to suit the Fashion, the taste of the Artist, or the predilections of his Patrons. The usual width of the broad stroke of a three inch letter, (when not condensed) is one inch and a quarter. In making letters of a larger size, to every three quarters of an inch added to the length of the letter, add one quarter of an inch to the width of the bar.

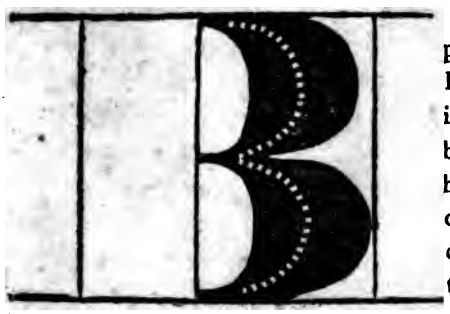
DIRECTIONS FOR PAINTING THE ROMAN ALPHABET.

First draw two horizontal lines parallel to each other, leaving a space between them equal to the length of the letter you design to paint. These lines, for the purpose of distinction, are denominated horizontal or long lines.



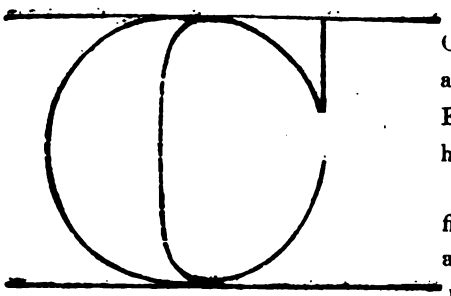
The A, without its beards, occupies an exact square, or the same distance on the lower line as equals the distance between the two horizontal lines; and is left flat on the top about one half the width of the broad stroke.

To make the A, lay the A rule obliquely across the lower line, so that its upper oblique end will lie parallel with the upper long line; then, with a lead pencil, draw a line in the place of the left hand stroke of the A. Then turn the rule over and lay it across the lower line and with the upper line, as before, observing to move it far enough to the right to leave the top of the A flat one-half the width of the rule, or broad stroke. Then, with your pencil, draw a line on both sides of the rule, as seen in the Example. Then lay your rule parallel with the long lines, and draw a line in the place of the cross stroke, which is to be equidistant from the angle of the letter and the lower line. You will now proceed to paint the A, observing to follow the lines made with the lead pencil. Lastly, paint the beards, the length of which are to be equal to one-third the width of the beard, or broad stroke of the letter.



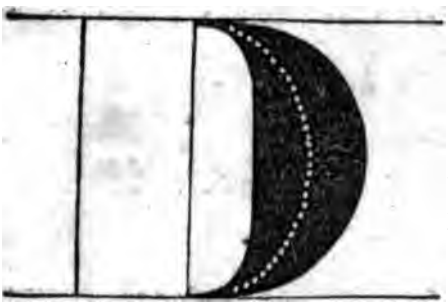
The B, as may be seen in the Example, fills the square; or, its breadth equals its length. The upper circular part of the B, in its broadest place, equals the width of the bar, and falls short coming up to the right hand perpendicular line one-twentieth part of the length of the letter. The lower circular part, together with the space between the circle and the bar, is as much broader than the upper circle as it takes to fill out the square. The place where the two circular parts unite with the bar, is equidistant from the top to the bottom.

To make this letter, first lay your rule perpendicularly across the horizontal lines, and proceed to lay out the bar. Then with your dividers set to the length of the letter, place one point in the angles of the left line of the bar with the long lines, and with the other point lightly prick the upper and lower lines. To these points lay your rule, and lightly with the point of your dividers strike the right hand perpendicular line. Next, with dividers, find half the length of the bar, and prick it. You will now proceed to paint the bar. When this is done, draw your pencil through the centre of the circular parts of the letter, as marked in the precedent by the dotted line. Then proceed to fill out and shape the letter, as given in the Example.



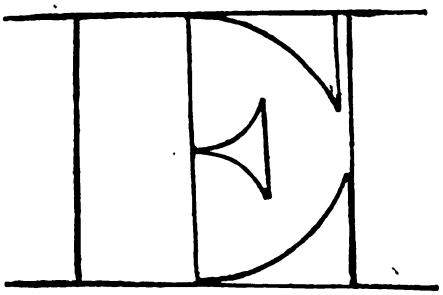
THE C fills the square. Where the C is large, it will improve its appearance to add a little to its width, as marked in the Example. The open space at the right hand is principally above the centre.

To make this letter, with your dividers find the centre between the two long lines, and sweep a circle. Then mark for the open space, and lay your rule perpendicularly across the long lines, so as to touch the points of the circle; and draw a line from the superior horizontal line to the upper point of the circle. Next, lay your rule perpendicularly across the long lines, and even with the extreme left [illegible]n of the circle, and on the right side of the rule strike a line in the place of the dotted line in Example. You will now proceed to paint the letter. With your pencil just trace the circle, observing not to make the stroke wider than the most slender portion of the letter. This being done, fill out and shape the letter, as given in the Example.



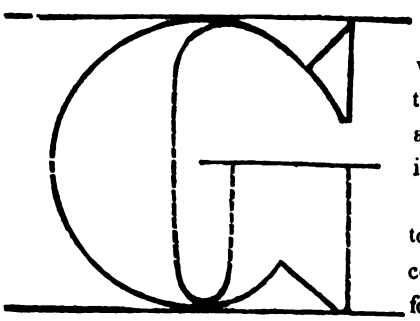
THE D fills the square. The circular part, in its broadest place, equals the width of the bar. To make the D, first lay out your bar, as in the case of B. Then with your dividers set to the length of the letter, place one point in the angles of the left hand line of the bar, with the horizontal lines, and with the other to the right, lightly prick the upper and lower long lines. To these points lay your rule, and with your pencil mark both sides of it, as represented by the open dotted lines in the Example. Now proceed to paint the bar; after which, draw your pencil through the circular part of

the letter, as represented by the dotted line, in the dotted line in the precedent. Next, fill out and shape the letter; observing that its circular part, in its broadest place, exactly fills the space between the open dotted line. Lastly, paint the beards, and the letter is done.



THE E occupies its length on the lower line. To make the E, proceed, as in making B, to lay out the bar, and to find the place of the right hand line, which must be made (if the ground is light colored) with a sharp pointed pen-knife, or dividers.—Next, with your dividers find half the length of the bar, and prick it. Then, with your dividers set to two-thirds the width of the bar, place one point in the mark last made, and with the other point to the right on a line parallel with the long lines, lightly prick the point. To this point, and parallel with the bar, lay your rule and strike a line one-half the length of the bar, the ends of which are to be equidistant from the upper and lower lines. Then, a little to the left, and parallel with the right hand line, lay your rule, and strike a line for the upper right hand corner, which is to be about three-eighths the length of the letter. Next, proceed to paint and shape the letter, as represented in the Example; observing, in all cases, to make the lower corner about one-eighth larger than the upper. The shape of these corners may be altered to suit the taste, as marked in the Example.

THE F falls short of filling the square about one-sixteenth of its length. The directions above given for making the E are to be followed in forming the F, leaving off the lower right hand corner.

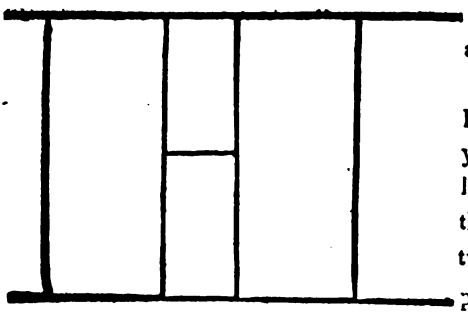


THE G, without its beards, occupies a whole square, as seen in the specimen. When the G is large, its appearance is improved by adding a little to its width, as directed in forming the C.

In forming the G, the same directions are to be followed as in making the C, with the exception of its lower right hand portion. To form the lower right hand portion of the G, lay your rule perpendicularly across the horizontal lines, a little to the right of the circle,

G

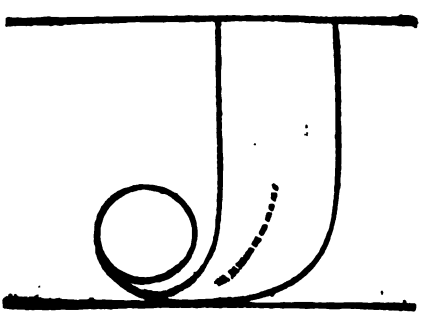
and with a lead pencil draw a line on the right hand side of the rule, also on the left hand side, as represented by the dotted line in the Example. Then, with your dividers set to half the length of the letter, place one point in the angle of the right hand line with the lower line, and with the other prick the right hand perpendicular line. To this point, and parallel with the long lines, lay your rule and draw a line, as represented in the example. You will now proceed to paint and finish the letter, as marked out in the example.



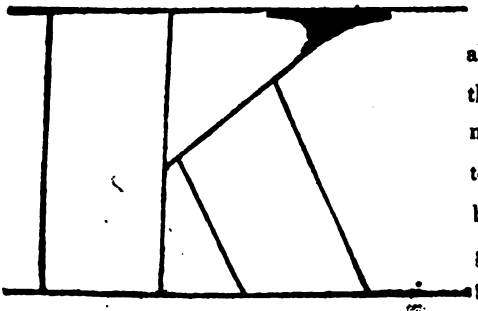
THE H more than fills the square about one-twentieth of its length.

To form this letter, lay out the left hand bar, as in making B. Then, with your dividers set to about one-fourth the length of the letter place one point, in the angles of the right hand line, with the two long lines, and with the other lightly prick the upper and lower lines. To these points lay your rule, and lay out the right hand bar. Next, with your dividers set to half the length of the letter, place one point in the angles of the middle lines of the left and right hand bars with the upper and lower lines, and with the other lightly prick the middle lines. To these points lay the rule, and draw a line in the place of the connecting stroke of the H. This being done, proceed to paint the letter as marked out. Lastly paint the beards, and the H is done.

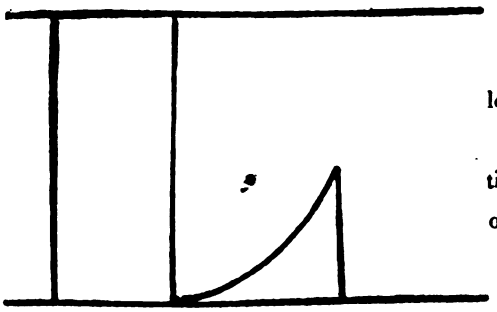
THE I, without its beards, occupies two-fifths of the square. To make the I, lay the rule square across the long lines, and with a lead pencil draw a line on both sides of it, as in making B. This done, paint to the lines, and lastly paint the beards.



THE J occupies about four-fifths of a square, and is strait about two-thirds of its length, which may be laid out like the I.—When this portion is painted, next draw your pencil as represented by the dotted line in the specimen. Then proceed to fill out and shape the letter; observing to make the diameter of the round portion of the letter five-sixths as large as the bar. Lastly, paint the beards, and the letter is finished.

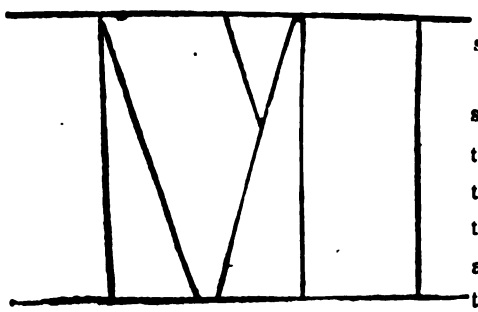


THE K more than fills the square about one-eighth of its length. To form the K, first lay out the bar, as directed for making the B. Next, set your dividers to about five-twelfths the length of the bar. Then, with one point set in the angle of the right hand line of the bar with the lower line, with the other point prick the right line of the bar. Then, with your dividers set to two-thirds the length of the bar, place one point in the angle of the right hand line of the bar with the upper line, and with the other point prick the upper line. To these points lay your rule, and with a lead pencil draw a line from one point to the other. Across this line lay your rule as near as you can judge in the place of the lower broad stroke, as represented in the specimen, and draw a line on both sides of the rule to the cross lines. Next, paint the letter as marked out, and you will have a correct K.



THE L occupies its length on the lower line.

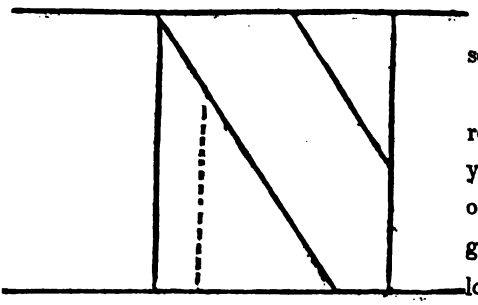
In making the L, follow the directions given for making the E, leaving off the centre and upper corner.



THE M rather more than fills the square.

To form the M, first draw a line square across the long lines. Then, with the dividers set to two-thirds the length of the bar, place one point in the angle of the perpendicular line with the lower line, and with the other point to the right prick the lower line. Do the same with the upper line. To these points, and at their right hand, lay the rule, and draw a line on both sides of it. Now find half the distance between the bar and the left hand line, on the lower line, and mark it. Then, if the centre portion of the M is to be left flat on

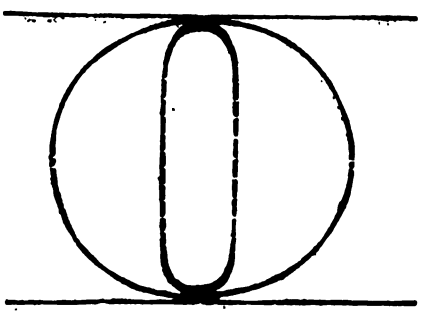
the lower line, as represented in the example, set the dividers to about one-eighth the width of the bar, and place one point at the mark last made, and with the other prick the line to the right, and then to the left. Next, to the left angle of the bar with the upper line, and to the point at the right of the centre mark on the lower line, lay your rule, and draw a line from the point to the angle of the rule with the bar. Next, to the angle of the left hand line with the upper line, and to the point at the left of the centre mark on the lower line, lay your rule, and draw a line on both sides of it, as represented in the Example. Now paint the letter as marked out, observing not to make the fine strokes too heavy.



THE N falls short of filling the square one-sixth of its length.

To form the N, draw a line as directed for making the M. Then, with your dividers set to five-sixths the length of the letter, place one point in the angle of the perpendicular line with the lower line, and with the point to the right prick the lower line. Do the same with the upper line. To these points lay your rule, and strike a line. Then, with your dividers set to half the width of the bar, place one point in the angle of the right hand line with the lower line, and with the other to the left prick the lower line. To this point, and to the angle of the left hand line with the upper line, lay your rule, and draw a line on both sides of it, as represented in the example. Next, paint the letter.

The left hand stroke may occupy the place represented in the Example by the dotted line, if preferred.

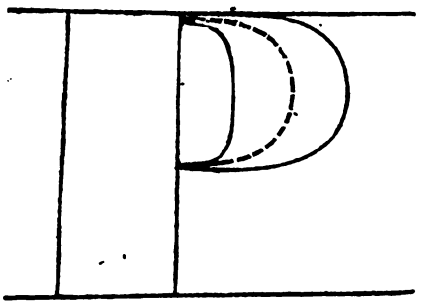


THE O, if exactly round, would no more than fill the square. But, as seen in the Example, it varies from being round about one-twelfth of its diameter.

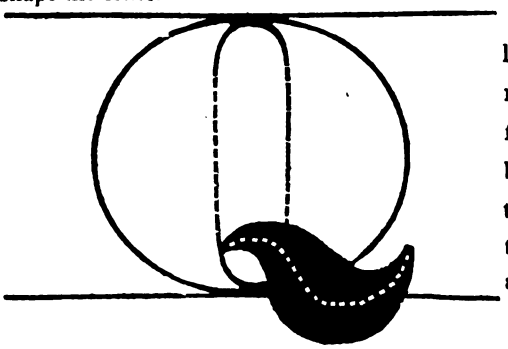
To make the O, proceed as is directed for making the C to sweep a circle.

Then opposite the extreme left and right of the circle, and FROM the circle about one-twenty-fourth of its diameter, lightly prick the point. To the point at the left hand, and perpendicularly across the horizontal lines

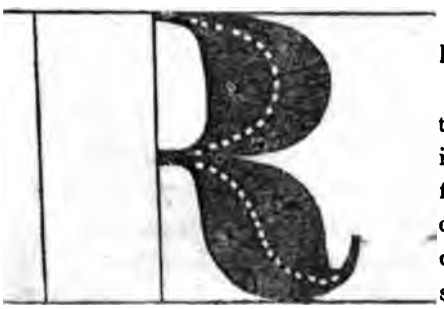
lay your rule, and draw a line as represented by the dotted line in the specimen. Proceed in the same manner to draw a line in the place of the right hand dotted line. In painting the O, first fill out to the dotted lines, and shape it to the true circle, as represented in the example.



THE P occupies the square. To make the P, first lay out the bar; then, with your dividers set to about seven-twelfths the length of the bar, place one point in the angle of the right hand line, with the upper line, and with the other point prick the right hand perpendicular line. Then with your dividers set to the length of the letter, place one point in the angle of the left line of the bar with the upper line, and with the other point to the right prick the upper line. To the left of this point, and perpendicularly across the horizontal lines, lay your rule, and mark the point both sides of it, as represented by the open spaces in the circular part in the example. You will now proceed to paint the bar, after which you will draw the pencil through the circular part of the lettter to the point marked on the right hand line of the bar, as represented by the dotted line in the example. Then, guided by the marks you have made, represented by the open spaces in the specimen, proceed to fill out and shape the letter.



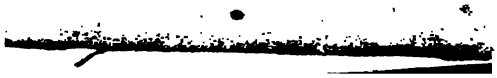
THE Q in all respects is made like the O, excepting the lower or right hand division; to paint which first draw your pencil as represented by the dotted line in the specimen; afterwards fill out and shape this portion of the letter, as given in the example.

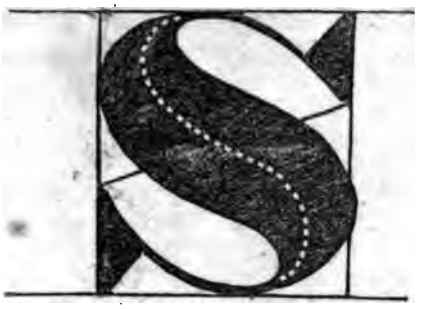


THE R, without its beards, occupies its length on the long lines.

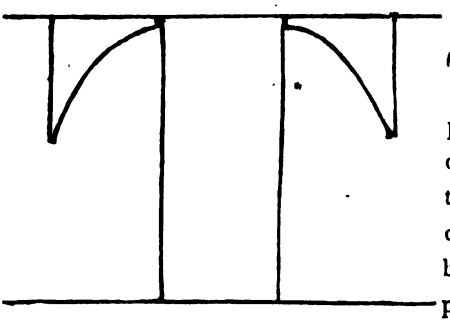
The directions given for making B are to be observed in making the R, excepting its lower right hand division; to paint which first draw the pencil as represented by the dotted line in the example; afterwards fill out and shape it as given in the example, observing at the same time its true position.

H





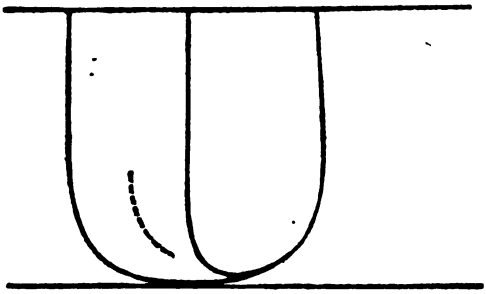
To make the S, lay your rule perpendicularly across the horizontal lines, and draw a line from the upper to the lower line. Then, with your dividers set to five-sixths the length of the letter, place one point in the angle of the perpendicular line with the lower line, and with the other point to the right prick the lower line. Do the same with the upper line. To these points lay your rule and strike the right hand line. Next with your dividers set to three-fifths the length of the letter, place one point in the angle of the left line with the lower line, and with the other prick the left line. Then bring the point of your dividers a little nearer together and place one point in the angle of the right line with the upper line, and prick the right line. To these points lay your rule, and draw a line from one to the other. Next, with your dividers set to one-eighth the length of the letter, place one point in the angle of the cross line with the left line, and with the other prick the cross line. Then, with one point placed in the angle of the cross line with the right line, with the other prick the cross line. Next, proceed to paint the letter by first drawing the pencil (with a fine stroke) from the angle of the cross line with the right hand line to the angle of the cross line with the left line, following the directions pointed out by the dotted line in the example. This being done, proceed to fill out to the points made on the cross line, and shape the letter as given in the example; observing the relative position of the letter to all the lines, when this most difficult letter contained in the alphabet to make correctly will be properly shaped.



The T occupies more than the square one-fifth of its length.

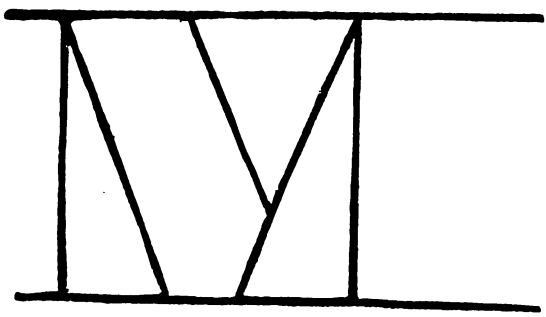
To make the T, first lay your rule perpendicularly across the long lines, and lay out the bar. Then, with your dividers set to two-fifths the length of the letter, place one point in the angle of the left line of the bar with the upper line, and with the other point to the left prick the upper line. Next place one point in the angle of the right line of the bar with the upper line, and with the other point to the right prick the upper line. To the left point, and perpendicularly across the horizontal lines, lay your rule, and draw a line in the place of the left hand dotted line. Proceed in the same way to draw a line in the place of the right hand dotted line.

The length of the lines, represented by the dotted lines in the example, are about two-fifths the length of the letter. After painting the bar, next, (guided by the lines you have made) you will proceed to paint and shape the corners, as represented in the example.



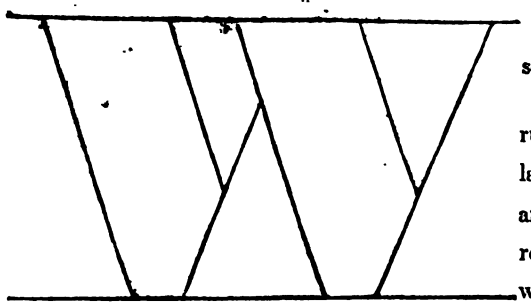
THE U falls short of filling the square about one-ninth of its length The left hand line of the broad stroke is straight two-thirds the length of the letter. The right hand line of the broad stroke is straight eight-ninths the length of the letter. The right hand stroke of the letter is also straight two-thirds of its length.

To make the U, first lay your rule in the place of the broad stroke, and square across the long lines and draw a line on both sides of the rule, as represented by the dotted lines in the example. Then, with your dividers set to eight-ninths the length of the letter, place one point in the angle of the left hand line of the broad stroke with the upper line, and with the other point to the right prick the upper line. To this point, and square across the long lines, lay your rule, and draw a line in the place of the right hand dotted line. You will now proceed to paint the straight portions of the letter, as marked out by the lines you have made; after which you will draw your pencil through the circular part of the letter, as represented by the dotted line. This having been done, proceed to fill out and shape the U, as represented in the example.



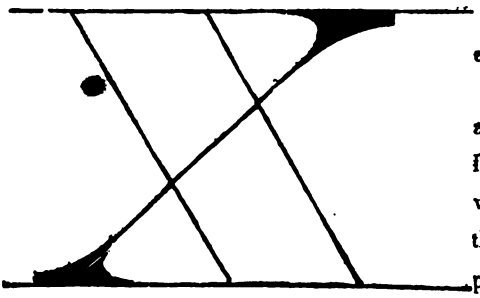
THE V is A reversed, without its centre connecting stroke.

To make the V, follow the directions given for making the A, ONLY reverse it, leaving out its centre connecting stroke.



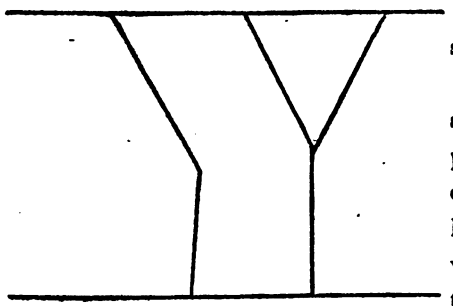
THE W more than fills the square, nearly two-fifths of its length.

To make the W, lay the W rule so that its upper oblique end will lay parallel with the upper long line, and draw a line on both sides of it, as represented in the example. Then, with your dividers set to a little more than one-fourth the length of the letter, place one point in the angle of the right hand oblique line with the upper line, and with the other point to the right prick the upper line. To the right of this point, and parallel with the upper long line, lay the oblique end of the rule, and draw a line on both sides of it, as before. Then, with your dividers set to half the width of the bar, place one point in the angle of the left hand oblique line with the lower line, and with the other point to the right prick the lower line. To this point, and parallel with the lower line, lay the oblique end of the rule, and draw a line in the place of the middle fine stroke. Proceed in the same manner to draw a line in the place of the right hand fine stroke. You will now proceed to paint the letter, observing to trace accurately the lines you have made.



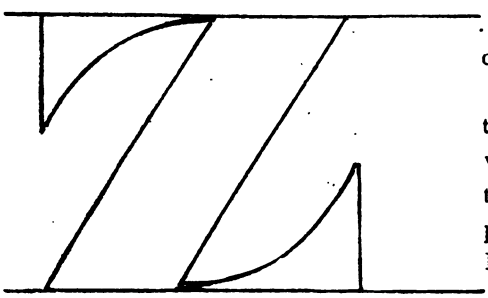
THE X more than fills the square about one-twelfth of its length.

To make the X, lay your rule square across the long lines, and draw a line from the upper to the lower line. Then, with your dividers set to one-twelfth more than the length of the letter, place one point in the angle of the perpendicular line with the upper line, and with the other point to the right prick the upper line. Do the same with the lower line. To these points lay your rule, and draw a line from one point to the other. Next, place your rule so that its left line will meet the angle of the left hand perpendicular line with the upper line, and the right line rule will meet the angle of the right hand perpendicular line with the lower line. Then draw a line on both sides of the rule, as represented in the example. Next, lay your rule to the other angles of the square, and draw a line in the place of the fine stroke. In painting this letter, trace the lines you have made ACCURATELY, and you will have a correct X.



THE Y, without its beards, fills the square.

To make the Y, proceed to lay out the square by drawing the right and left hand perpendicular lines. Then find half the distance between the two perpendicular lines on the lower line, and prick it. Next, with your dividers set to half the width of the bar, place one point at the mark last made, and with the other point to the right, prick the lower line. To the left of this point, and square across the long lines, lay your rule, and draw a line half the length of the letter on both sides of it. Then, with your dividers set to two-fifths the length of the letter, place one point in the angle of the left hand perpendicular line with the lower line, and with the other point to the right prick the lower line. To this point, and to the angle of the right hand perpendicular line with the upper line, lay your rule, and draw a line in the place of the fine stroke in the letter. Next lay your rule so that the left line of the rule will meet the angle of the left hand perpendicular line with the upper line, and the right line of the rule will meet the angle of the right hand perpendicular line with the lower line, and draw a line on both sides the rule, as represented in the example. Paint the letter as marked out.



THE Z more than fills the square one-eighth of its length.

To make the Z, proceed to draw the left hand perpendicular line. Then, with your dividers set to one-eighth more than the length of the letter, place one point to the right & prick the upper line. Do the same with the lower line. To these points lay your rule, and strike the right hand line. Then lay your rule so that the right line of the rule will meet the angle of the left hand perpendicular line with the upper line, and the left line of the rule will meet the angle of the left hand perpendicular line with the lower line, and draw a line on both sides of it as represented in the example. Next, with your dividers set to three-sevenths the length of the letter, place one point in the angle of the left hand perpendicular line with the upper line, and with the other prick the left line. This gives the length of the left line of the upper left hand corner. Next, widen the points of your dividers a little, and place one point in the angle of the left hand perpendicular line with the lower line, and with the other prick the right hand line; which is to be

the length of the right line of the lower right hand corner. Next, paint and shape the letter to the lines, as represented in the example.

The & more than fills the square one-fifth of its length.

In forming this character, first draw the left hand perpendicular line. Then, with your dividers set to one-fifth more than the length of the character, place one point in the angle of the perpendicular line with the upper line, and with the other point to the right prick the upper line. Do the same with the lower line. To these points lay your rule, and draw the right hand line. This being done, proceed to paint the character by first drawing the pencil, as near as you can judge, in the place of the dotted line in the specimen. Then, observing the position of the character in reference to the perpendicular and horizontal lines, proceed to fill out and shape the &, as represented in the example.

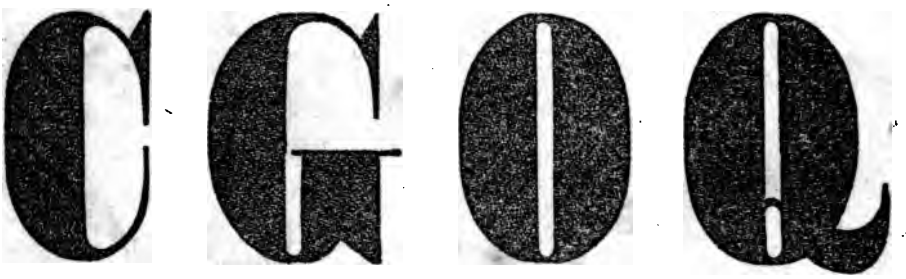
THE ROMAN CAPITALS CONDENSED.

In forming the Roman Capitals Condensed, the same variations do not exist in reference to the distance they occupy on the long lines, as in their usual or uncondensed form. Thus, when B, C, D, G, H, J, K, M, O, P, Q, U, W, [redacted]ensed one-third, A, E, F, L, N, S, T, V, X, Y, Z, occupies only about [redacted]he square each.

In forming the Condensed Roman Alphabet, with the exceptions of C, G, O, Q, nearly the same rules are observed as are given for painting the letters of the Alphabet in their usual form; only, one-half the square, or two-thirds the usual width of the letter, as above represented, is to be included within the limits of the two perpendicular lines.

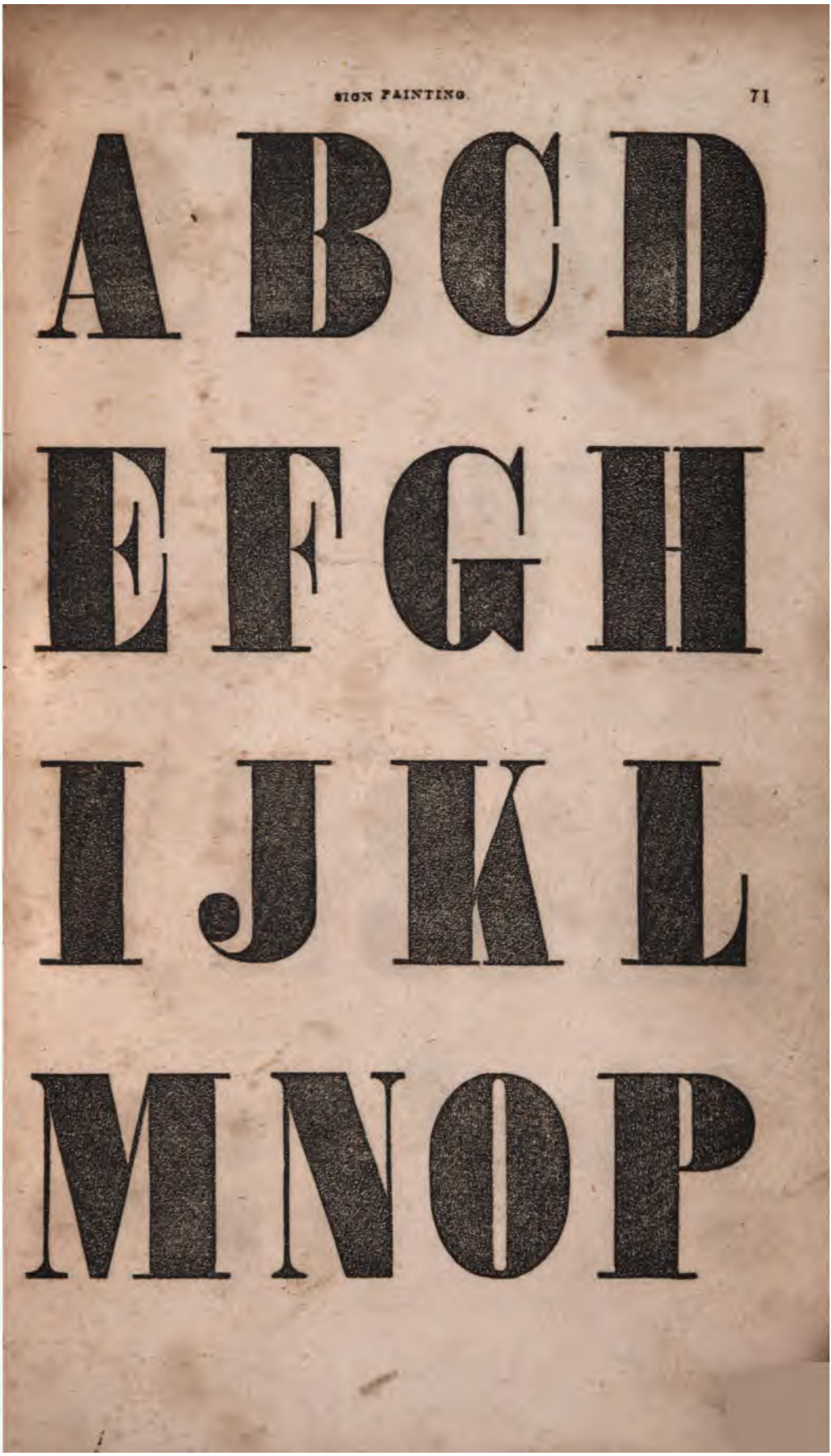
To form the C, G, O, Q, lay your rule perpendicularly across the horizontal lines, and with a lead pencil draw lines in the places represented by the dotted lines in the specimens. Then paint and shape the letters as given in the examples.

EXAMPLES.



The A rule may be used in forming the A, N, W, V, X, and Z. The broad stroke of the letter is condensed one-fourth of its width, if the letters are condensed as above represented.

The learner will be assisted in shaping his letters, and determining their proper distance one from the other, by referring to the examples which are given on the succeeding pages. Great care should be taken by the Artist in forming his letters correctly. An ill-shaped letter on a Sign attracts the attention and ridicule of the traveler sooner than almost any other object. Therefore, the learner will discover the importance of following systematic principles in this important and necessary branch of his profession.


ABCD
EFGH
IJKL
MNOP

QRST

UVWX

YZ&Æ

:;,’-?!

THE ANTIQUE LETTER.

THE ANTIQUE, OR BLOCK LETTER, (as it is sometimes called,) next to the Roman Capitals, have generally been preferred, to all other forms now in use. The width of the bar of a three inch letter, is one inch. In forming letters of a larger size, to every inch added to the length of the letter, add one-fourth of an inch to the width of the bar.

In forming the Antique Alphabet, first draw the long lines, as directed for painting the Roman Capitals. Then below the upper line, and parallel with it, draw another line, leaving a space between them equal to two-thirds the width of the bar. In like manner, draw a line above the lower line. These lines give the depth of the beards, or square projections, at the lower and upper portions of the letters. The width of these projections should equal half the width of the bar. These lines, also, give the width of the narrow portions of the letter, as represented by the following examples :

In forming the Antique Letters, proceed, with your dividers, rule and pencil, to draw their out-lines, as given in the examples. In forming these lines, the inexperienced will be materially assisted by referring to the directions given for painting the Roman Capitals. The Antique Letters differ from the Roman Capitals in the distance they occupy on the long lines, the size of the broad and narrow portions of the letter, the shape and size of the beards, and the triangular portions of the

In painting the circular portions of the Antique Letter, follow the directions given for painting the Roman Capitals.

The distance each letter occupies on the long lines, without its beards, more than the length of the letter, will be seen by referring to the figures placed over each letter in the examples given on the following pages. Thus, A more than fills the square one-fourth of its length; B, one-sixteenth, &c. This arrangement shows the position of the right hand perpendicular lines.

1-4 1-16 1-12

1-16 1-10 1-10

1-12 1-8

1-3 1-12

1-2 1-7

M N

1-12 1-16 1-12

O P Q

1-16 1-4

R S T

1-4

U V

1-2

W

1-2

X

1-4

Y

1-8

Z

1-2

&

Æ

K

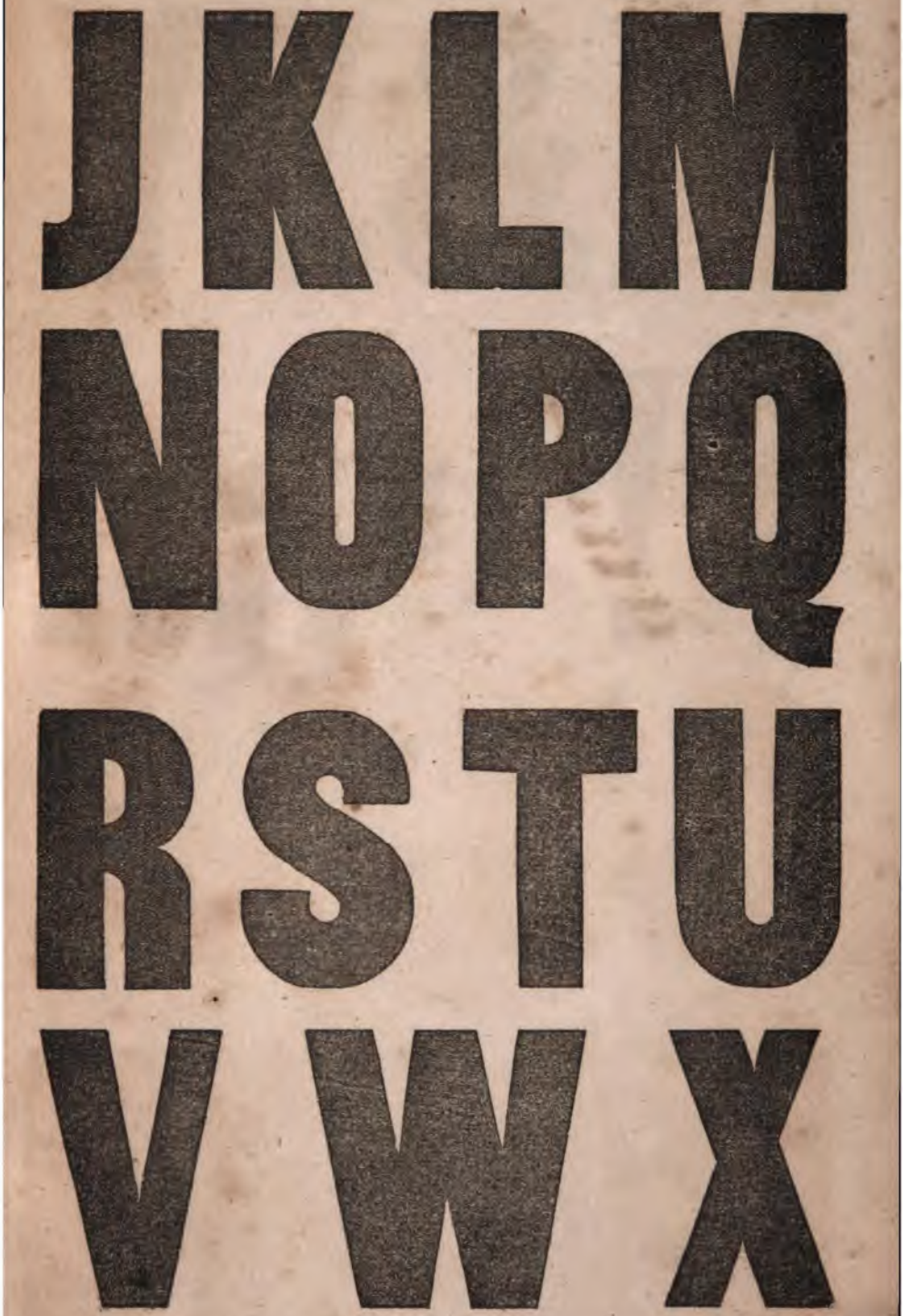
GOTHIC LETTERS CONDENSED.

LETTERS of this form, of all others now in use, are most simple in their construction, and rude in their appearance. A variety of forms, and not elegance of appearance, are sought for in this style of letters; and they will, therefore, never be extensively used for any considerable length of time, in this country, for Sign Painting.

Although letters of this form are most simple in their construction of all others, they are not the least difficult to paint, by one unaccustomed to the use of the pencil. For, though rude in their appearance, their outlines should be painted so as to appear smooth and regular; and this will be found somewhat difficult, when we consider the uniform width of all the strokes of the letters, (a slight deviation from which would be perceptible,) together with the square abrupt endings of the upper, lower, and latteral portions of the letters, which require a skillful management of the extreme point of the pencil in filling out and sharpening the ends to the lines.

The A, K, N, R, T, V, X, Z, occupies two-thirds of the square. The B, C, D, G, H, O, P, Q, S, U, Y, occupies two-fifths of the square. The E, F, J, L, occupies one-half the square. The M, and W, occupies three-fourths of the square.

The width of the bar of a three inch letter is five-eighths of an inch. To every inch added to the length of the letter, add one-fourth of an inch to the width of the bar. Paint and shape the letters as represented on the pages which follow.


J K L M
N O P Q
R S T U
V W X

YZ&Æ

:. .'!?

:.,, !

THE OBLIQUE LETTER.

THE GOTHIC OBLIQUE LETTERS are, of all others, the most difficult to make; and consequently are rarely to be seen, except in cities that are favored with ingenious and experienced workmen. They are only used where small letters are required, and seldom exceed three inches in length. The surest method to succeed well, is first to obtain a correct pattern of each letter on paper, and transfer them, as directed on page 39.

The patterns may be obtained by the aid of the Camera Obscura, if you first make wood letters in the form directed for making the Gothic Letters Condensed, and place them as you wish to have them represented, at a proper distance from the lens. The wood letters should be about six inches long, and about three-fourths of an inch thick.

THE EXTRA CONDENSED LETTER.

THIS is a useful Letter where but little space is to be occupied by a large amount of matter. To paint the Extra Condensed Letter, great care is requisite in forming the hair marks. We give below a specimen of Capitals and Figures.

A B C D E F C H I J K L M N O P

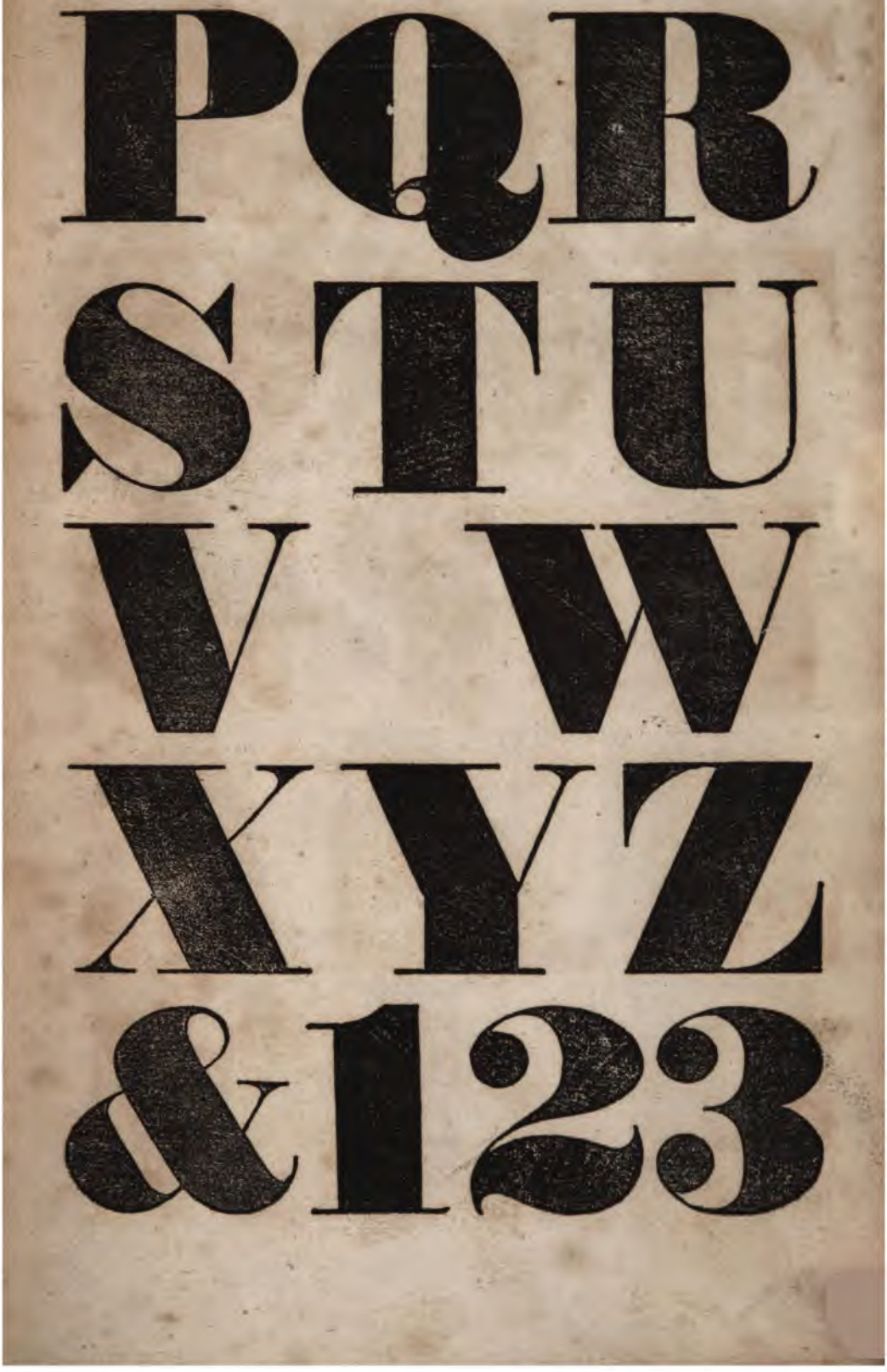
Q R S T U V W X Y Z & 1 2 3 4

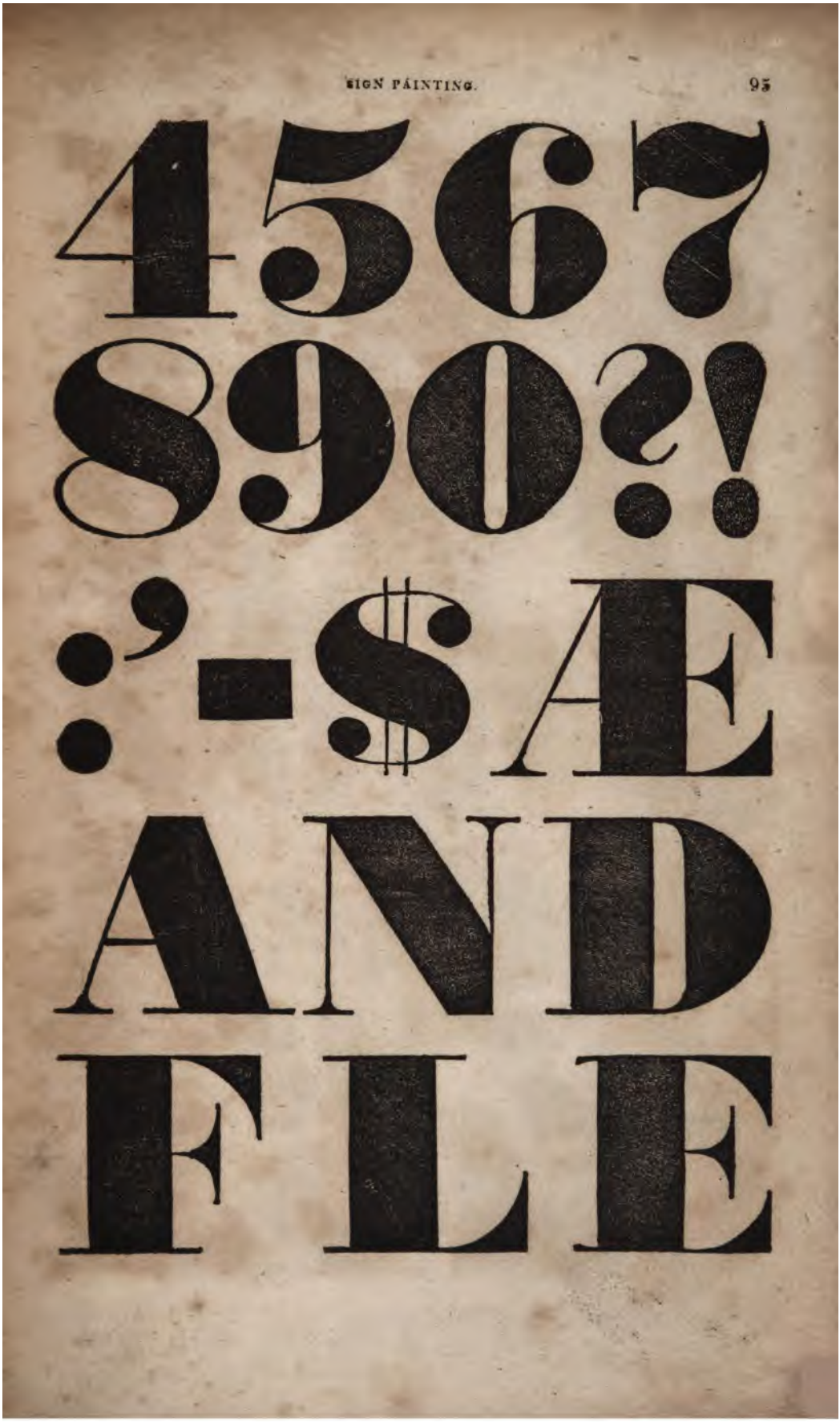
5 6 7 8 9 0 AMERICA, ROME.

THE ROMAN CAPITALS.

As we have given the outlines of the Roman Capitals on some preceding pages, and the directions for forming them, we shall barely introduce them here as specimens, together with the figures accompanying them.

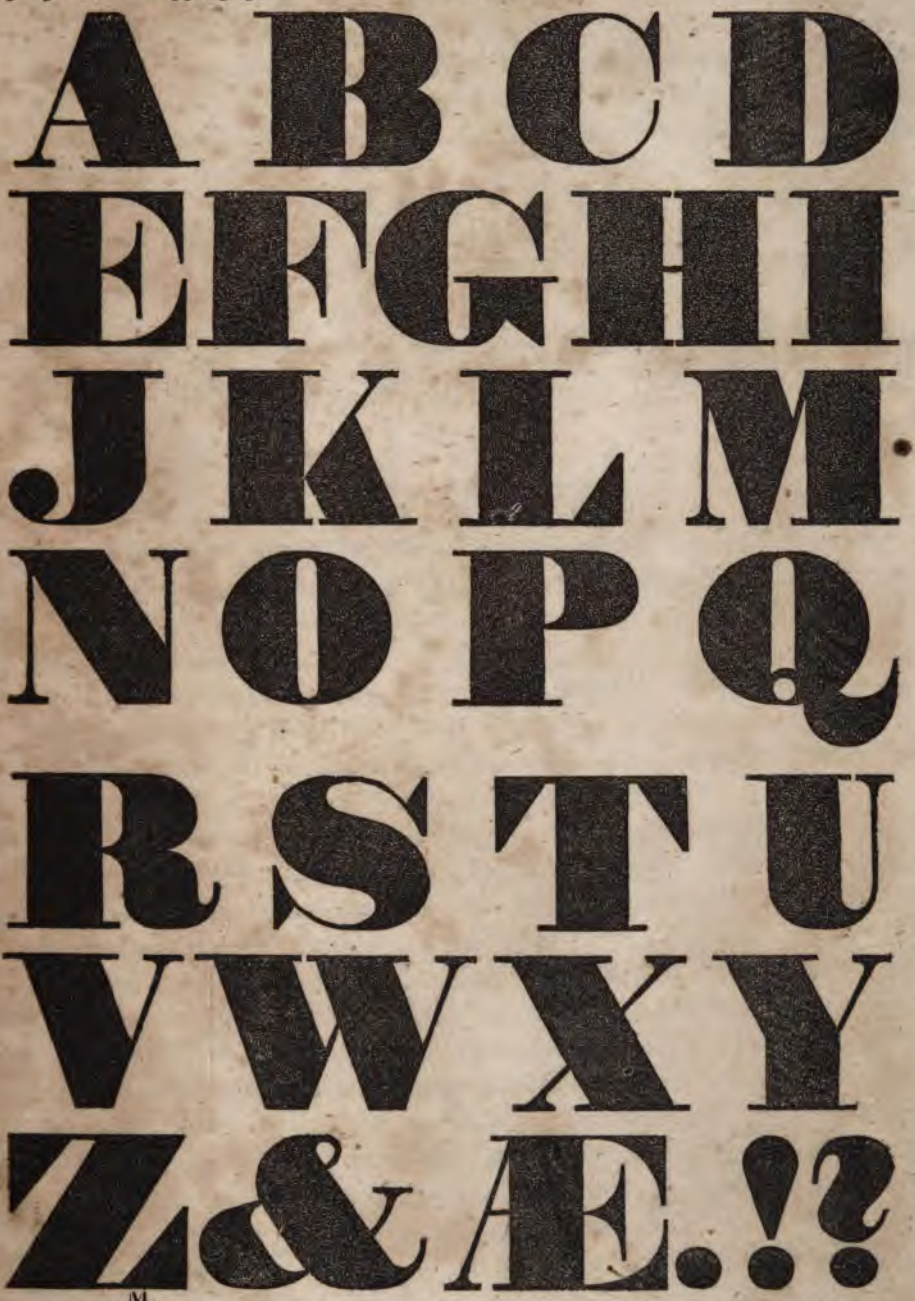
ABC
DEF
GHI
JKL
MNO


PQR
STU
V W
XYZ
&123


4567
890?!
:'-$AE
AND
FLE

THE ROMAN CAPITALS EXTENDED.

THE ROMAN LETTER EXTENDED is of very recent origin. The specimens introduced in this work are but partially Extended. This kind of Letter is used for the purpose of occupying space where a short word occurs.



M

THE ITALIC CAPITALS.

THE bar of a three inch letter is one inch and one-eighth. To every inch added to the length of the letter, add one-fourth of an inch to the width of the bar.

In forming the Italic Capitals, it will be found convenient to cut off one end of the rule obliquely, as directed for making the Roman W, and in all cases where directions are given for laying the rule square across the long lines in forming the Roman Capitals, in forming the ITALIC CAPITALS, lay the oblique end of the rule parallel with the upper long line, and draw a line on one or both sides of it, as directed for making the Roman letters.

A B C D E F G H I J K L M N

O P Q R S T U V W X Y Z &

SHADED LETTERS.

THE art of SHADING LETTERS may be easily acquired by any person accustomed to the use of the pencil, if he attend to the few following plain rules:

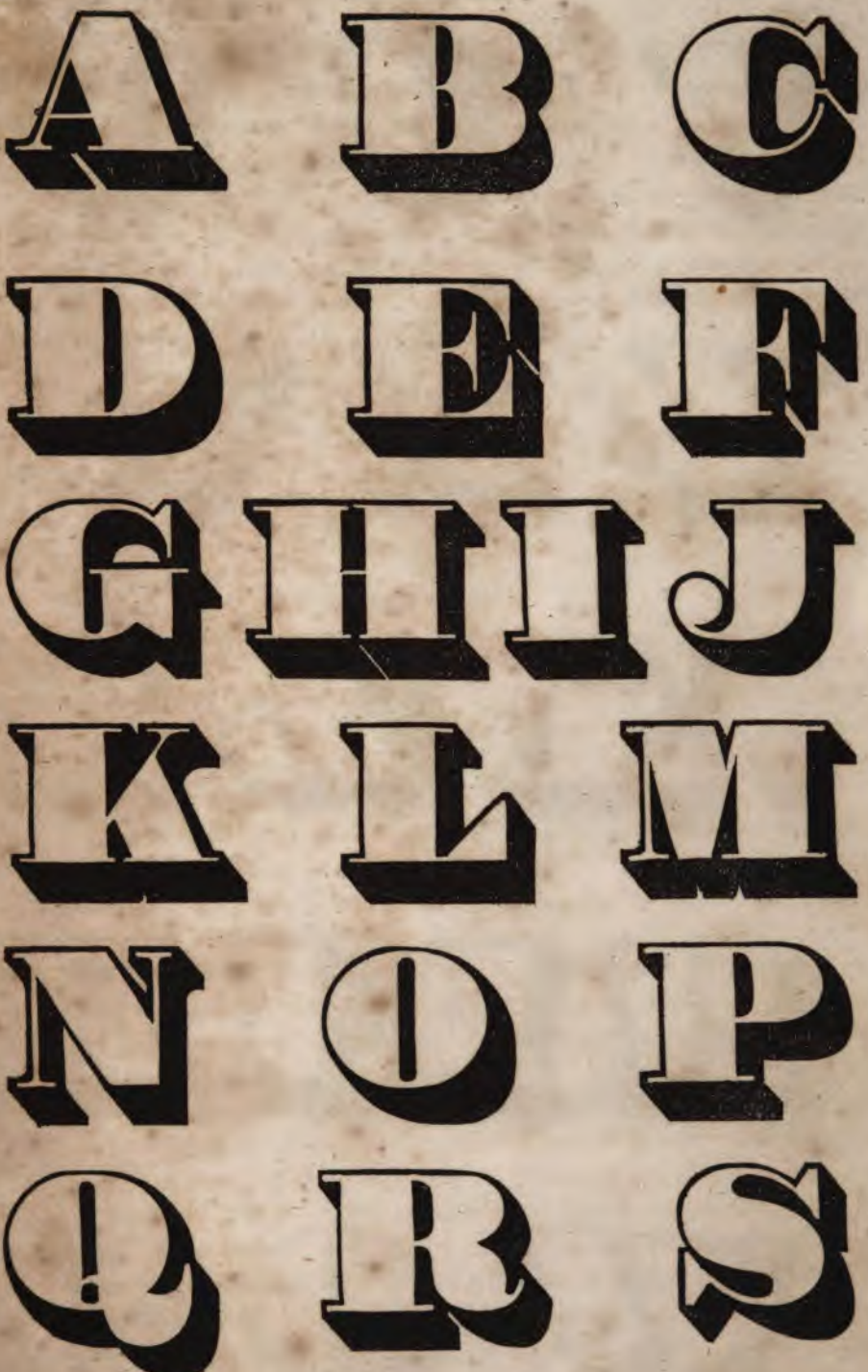
The breadth of the Shade is usually from one half to two-thirds the width of the bar, or broad stroke of the letter.

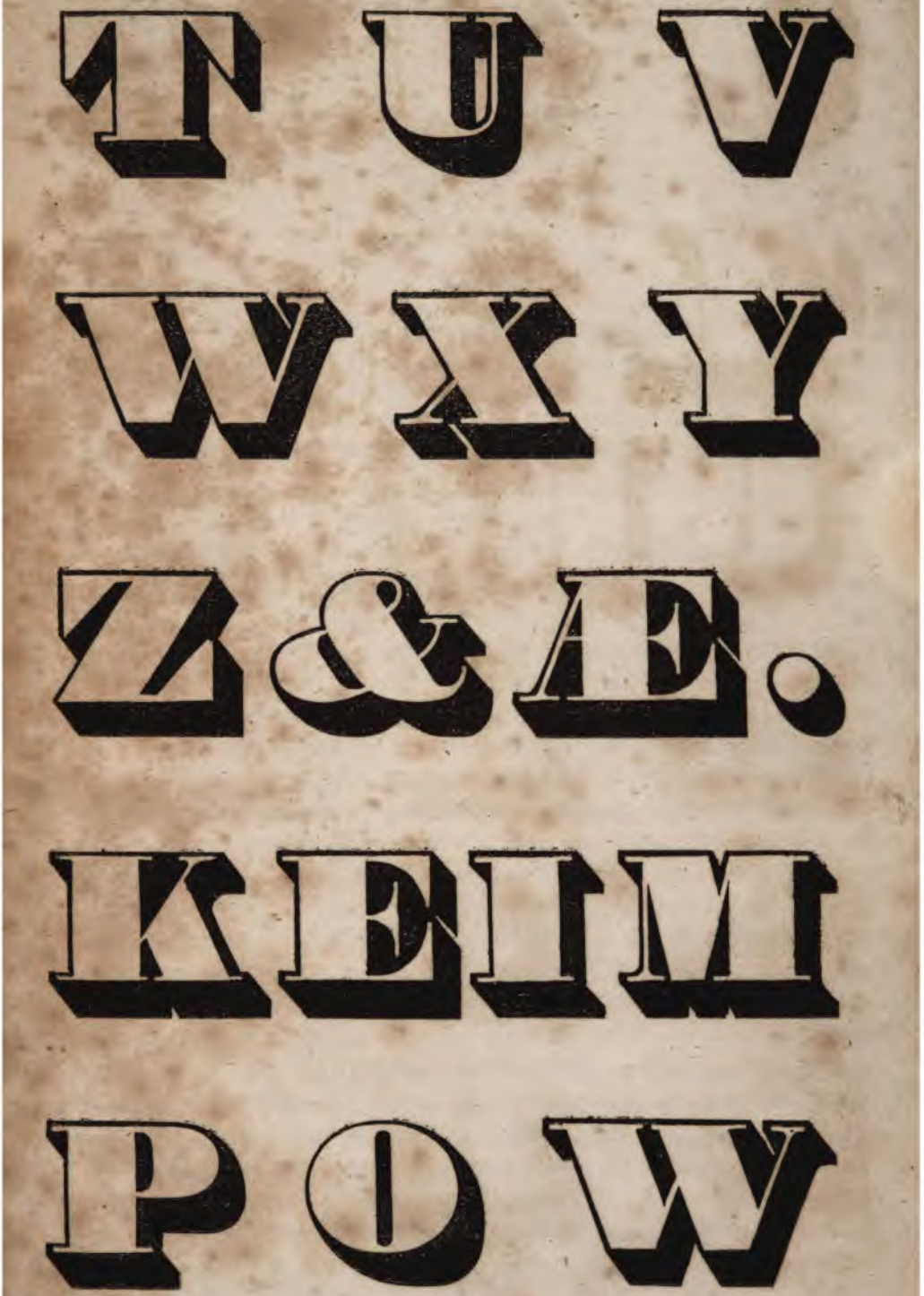
If the letter is black, it is usually shaded with lead color; and sometimes with vermillion, or Chrome Yellow.

If the letters are yellow and the ground black, they may be shaded with Green. But if the ground is Chocolate, they may be shaded with Black.

If the letters are laid in gold leaf, they may be shaded with Black, Vermillion, or with a color made of equal parts of burnt Umber and Chrome Yellow. When this color, or Vermillion, is used, that part of the shading required to be of a darker hue than the other, may be darkened with burnt Umber.

The operator, after having prepared his color for shading, will proceed to draw a line half or two-thirds the width of the bar below the lower horizontal line, which is to guide him in the lowest portions of the letters. This done, he is to proceed to shade his letters, in doing which, if he is inexperienced in the art, he is to sit facing the south, and to imagine the sun to be at 9 or 10 o'clock, A. M., and showing its rays upon the letters in the manner represented by the oblique parallel lines on the following page. This will enable him not only readily to discover what part of each letter is required to be shaded, but the proper shape of the shading required to be given to every portion of the different letters.


A B C
D E F
G H I J
K L M
N O P
Q R S


T U V
W X Y
Z & E.
K E I M
P O W

DIRECTIONS FOR GILDING AND SILVERING LETTERS ON SIGNS.

FIRST, lay on the ground color as directed for painting letters, and then give it a light coat of varnish, that will dry hard. When the varnish is thoroughly dried, it is to be rubbed down with pomice stone and water, when it is to be washed clean and wiped dry. Next, tie up, in a piece of fine linnen or cotton cloth, about two ounces of dry whiting, in powder, and give it a few raps on your hand, or a board, that the whiting may be dusted through the cloth. With this bag rub over the ground freely, and afterwards brush it off with the duster. The object of this is to prevent the leaf from sticking where it should not. This done, next proceed to draw the long lines, and to form the letters as directed for painting them, with this difference only, the gold size is to be used instead of paint. For this purpose good copal varnish is sometimes used; but gold leaf does not appear so brilliant when put on with varnish, and should not be used unless the leaf itself is to be varnished over; in which case varnish is preferred, because it is the cheapest. But gilded letters on out-door signs should never be varnished, because it would materially injure the appearance of the gold, and in a few years the varnish would loose its transparency, when the letters would appear extremely dull.

Fat oil is the sizing most generally used for all kinds of oil gilding that are not to receive a coat of varnish. It is prepared in the following manner:

Grind one ounce of White Lead and two ounces of Letharge very fine in one gill of old linseed oil that is pure. Expose this composition to the rays of the sun for ten days in a broad open vessel, observing to keep it as free from dust as possible. Then remove carefully the thick skin formed on the top of the oil, and pour off the clear oil, and mix with it a small quantity of spirits of turpentine, when it is to be placed in a glass vessel and corked tight, to prevent it from skinning over.

With this oil the letters are to be painted, or sized, in the usual way of painting letters, observing to lay the sizing as thinly and evenly as you conveniently can over every part of the letters. After the sizing is laid on, it is allowed to stand until it will, (as Painters call it,) "TALK:" that is, if you place the end of one of your fingers in the sizing, and draw it lightly and slowly towards you it will cause a low rumbling sound, a sure indication that the sizing is sufficiently dry. If the sizing becomes too dry, the leaf will not stick, and must consequently receive a second coat of sizing. This renders it necessary frequently to examine the condition of the size. It should be so dry as not to wet the end of your finger when placed upon it, and yet so soft as to be slightly adhesive, or sticky. A little experience will enable the operator to determine correctly the proper condition of the size for receiving the leaf. The next process is, to lay on the leaf.

In laying gold leaf, it is necessary to keep the air in the room as quiet as possible,

as the least perceptible current of wind would throw the leaf out of its place, and roll or double it in such a manner as to render it very difficult to lay it on without wasting a considerable portion of it. The leaf should not be removed from its place in the book until it is applied to the size which is to be done directly from the book. If the size of the letter does not require a whole leaf to be laid on at a time, it may be cut into strips one-eighth of an inch wider than the broad stroke of the letter to be gilded, in the following manner. Lay the book on a solid board, and lay your rule across the book in the place you wish to divide it, and press it firmly down with the thumb and longest finger of your left hand, and with your fore finger bear firmly on the strip that is to be cut off. Then with a sharp strong bladed knife, cut the book through if possible, at one stroke. If not, the stroke is to be repeated, until the book is fully divided. But if the leaf is not to be divided, a sufficient quantity of the back part of the book is to be cut off to allow each leaf to be taken off separately. One end of the book is now to be raised from the board by sliding the blade of your knife under it; when it is to be taken and held firmly between the thumb and finger of your right hand, while, with the thumb of the left hand you carefully raise the first covering of paper, and at the same time place the thumb of your right hand on the upper edge of the leaf. The paper is now carefully to be taken away, and the lower end of the book or strip is to be taken between the thumb and fore finger of the left hand so as to confine the lower edge of the leaf, which is to be turned downwards and carefully placed on the size, in the place you wish it to lie. In the same manner remove the next covering, and lay on the leaf as before, and so on, until the sizing is all covered. Next, with a silk handkerchief folded together, press down the leaf, that every part of it may firmly adhere to the sizing. The surplus leaf is now to be brushed off. This is also done with a silk handkerchief, loosely folded or gathered up in the hand. If any part of the sizing should now prove to be uncovered, the gilding may be mended with the fragments of the leaf brushed off. The sign is now to be set aside for a day or two to give the sizing a chance to dry and become hard, when it is to be brushed over again to smooth the edges of the letters, and to remove the remaining surplus leaf. This, however, may be dispensed with if the sign is wanted soon, or other circumstances make it necessary to furnish the work immediately.

If the leaf adheres where it should not, it may be removed by rubbing it with a piece of sponge, or clean linnen or cotton cloth wet in spirits of turpentine, or new linseed oil.

It was formerly the practice of oil gilders to press down and brush over the leaf with a ball of cotton; and this method is recommended by writers in general. It is however attended with one serious difficulty. If every part of the sizing is not completely covered, the fibrils of cotton will adhere to it, which will be detached from the ball and remain fixed in the size, much to the injury of the work, especially if the letters are to be shaded

THE USE OF THE CAMERA OBSCURA IN SIGN PAINTING.

It is not unfrequently the case that the likeness of certain objects are to be represented on signs, such as Carriages, Saddles, Boots, Shoes, &c., and it requires more ingenuity than ordinary painters possess, to give these objects a fair representation, without the aid of patterns, or some thing more to guide them than the knowledge they possess of the objects themselves, however correct that knowledge may be.

The Camera Obscura, rightly constructed and managed, will guide the artist unerringly in obtaining the out lines and determining the appropriate shades to be given in painting the objects he desires to represent.

A convenient Camera Obscura for this purpose may be cheaply constructed and fitted for use at any time when the rays of light will admit of its giving a fair representation.

First, provide yourself with a double convex lens, the focus of which should be from thirty-six to forty inches. A common spectacle glass of the above named focus answers a good purpose, and is to be preferred to glasses of a larger size of the same convexity.

The focus of a lens is the distance at which it contracts the rays of the sun to the smallest point, and may be easily ascertained by holding the glass so as to catch the rays of the sun, and holding a piece of paper on the side of the glass opposite to the sun where the rays of the sun is contracted to the smallest point. The distance between the glass and the paper determines its focus.

Next provide yourself with a board, which may be from three to four inches square, and three-fourths of an inch thick. In the center of this board set your lens with putty. The object of setting the lens in this board is to preserve it from injury.—Then fit a board to the north window of the room you occupy so as completely to shut out the light from passing into the room from that window. Then opposite the lower middle pane of the window, bore a hole through the board nearly twice as large as the lens. Then above and below the hole fasten two strips of wood in such a manner as to allow the board containing the lens to slide between them in the form of a dove's tail, and in such a manner as will allow the lens to occupy the center of the hole made in the window board. Then shove your window, put up the board and fasten it there. Next, slide in your lens, as above directed, and proceed to make the room as dark as possible, by blinding all the windows, and closing all the avenues admitting light into the room. This being done, if you place any thing having a white lead surface opposite to and at a distance of the focus of the lens from it, in a clear sunny day there will be represented on the white surface a beautiful and animated landscape, made up of a true representation of the various objects that are to be seen from that window, only they appear in a

reversed position. If you now place a mirror over the lens on an angle of forty-five degrees, and so that the rays of light passing through the lens, will fall on the surface of the mirror, the representation of the objects will be thrown directly downwards, and will appear at the distance of the focus of the lens below it in their right position. But in obtaining the outlines, and determining the shades of objects usually required to be represented on signs, the mirror may be dispensed with without occasioning any inconvenience.

The objects designed to be represented, are to be placed in front, and their center nearly on a level with a lens. The size of the object as represented may be increased or decreased by placing the object nearer, or farther off from the lens, and by placing the sign or paper where the fairest representation is given. If the representation of the object is required to be nearly as large as the object itself, the object may be placed within five or six feet of the lens, and the sign or paper removed to nearly the same distance from the lens on the other side. The operator, with a little experience, will be enabled to determine the proper position of the object designed to be represented, as well as the proper position of the surface designed to receive the representation. The representation of the object may be thrown directly upon the sign in its appropriate place, or its out lines taken on paper and preserved. But if it is thrown directly upon the sign, the sign should be placed bottom side up and made to stand steady, as the least variation of the position of the sign after you commence taking the out lines will cause a deviation from a true representation.

The same precaution is necessary when the likeness of an object is taken on paper. To accomplish this, the paper should be fastened by its corners to a smooth board so confined as to remain steady during the operation of taking the out lines, and marking the shades. The preliminary arrangements having thus been made, and the sun favorable to giving the fairest representation, the operator will next proceed with a lead pencil to trace the out lines, and mark the different shades, so that he can understand them when he comes to paint the object.

When the sun is at ten A. M., or at two P. M., it is the most favorable time in the day for this purpose.

If it is found inconvenient to occupy a north window for the above purpose, a west window may be occupied, in which case ten o'clock, A. M. is the most favorable time. If an east window be occupied, two o'clock, P. M., is the best time. But a north window is always to be preferred. In all cases it is required that the rays of the sun fall on the side of the object next to the lens.

For a philosophical disquisition of the Camera Obscura, see standard works on Natural Philosophy.

SMALT.

THE common strewing SMALT is a kind of glass which has been converted into coarse granular particles, of a shining blue color. A white Smalt may be made by pounding very clear glass in an iron mortar, until its particles are reduced to the consistence of very coarse sand. The dust is to be separated from the particles to be used by the means of a fine wire or common hair sieve.

A black Smalt may be obtained by taking very coarse sand, which is to be dried and sifted, to separate the coarse from the finer particles, when the coarsest particles are to be heated over a blacksmith's fire, until they acquire a black hue. The sand is then to be washed, and when dry is fit for use.

THE ART OF SMALTING SIGNS.

To White Lead add as much Prussian Blue previously ground in oil as is required to give the paint nearly the color of the Smalt, to which is to be added as much linseed oil as will give the paint the proper consistence for grinding, and then grind all together, until the colors are thoroughly mixed. If the Smalt is white, White Lead only should be used; but if black, add to the White Lead a small quantity of Lamp Black. As a very thick coat of paint is required for this purpose, it is to be laid on without being reduced by the addition of more oil, in the following manner: First, with your FETCHER (a small stiff brush) carefully trace the outlines of the letters and fill up between them. Next lay on the paint freely over every part of the sign that is to receive a coat of Smalt without, being careful to lay it smooth.

The Smalt is now to be strewed evenly over the face of the sign (without having any regard to the letter) until it is completely covered.

The Smalt is now to be settled into the paint by raising first one end of the sign and then the other, and letting them fall with considerable force upon the bench or table you occupy. This motion is to be repeated several times, when the sign is to be turned carefully bottom side up, to allow the surplus Smalt to fall off which may be collected and used at another time. The sign is now carefully placed where it will dry, which will require a day or two of fair sun.

ORNAMENTAL PAINTING.

APPENDIX BY THE PUBLISHER.

TO PAINT MAHOGANY.

Give the work two coats with oil paint straw color, and sand paper off smooth. Then prepare your paints with strong beer, and take one part of venetian red, & one part burnt Terra De Senna, give your work one coat spread very thin & light. This should be put on with a flat brush. For the darker shades take burnt umber and lampblack, or patent black ground together, and applied with a camel's hair pencil brush, to make the curls and knots, &c., and dark streaks. If any part is to be made very light, the staining may be rubbed off with a ball of cotton or buckskin. Light streaks may be made by drawing a piece of stiff leather, or soft wool across the work to take off the dark shade. When thoroughly dried then give three coats of varnish.

TO PAINT EYED OR CURLED MAPLE.

The work should be painted a light straw color, with two coats of oil paint. But as it varies from yellow to brown, you may add a little burnt umber to make it darker to suit the eye. Bur paint the work painted with yellow and burnt umber, or Terra De Senna, ground together in equal parts. But as it varies from yellow to a brown, no given paint is rendered. The eye, curls, &c., are formed by removing the staining with leather, the edges cut in notches so a number of them will touch at a time, or the ends of the fingers may be used instead of the leather. When thoroughly dry give three coats of varnish.

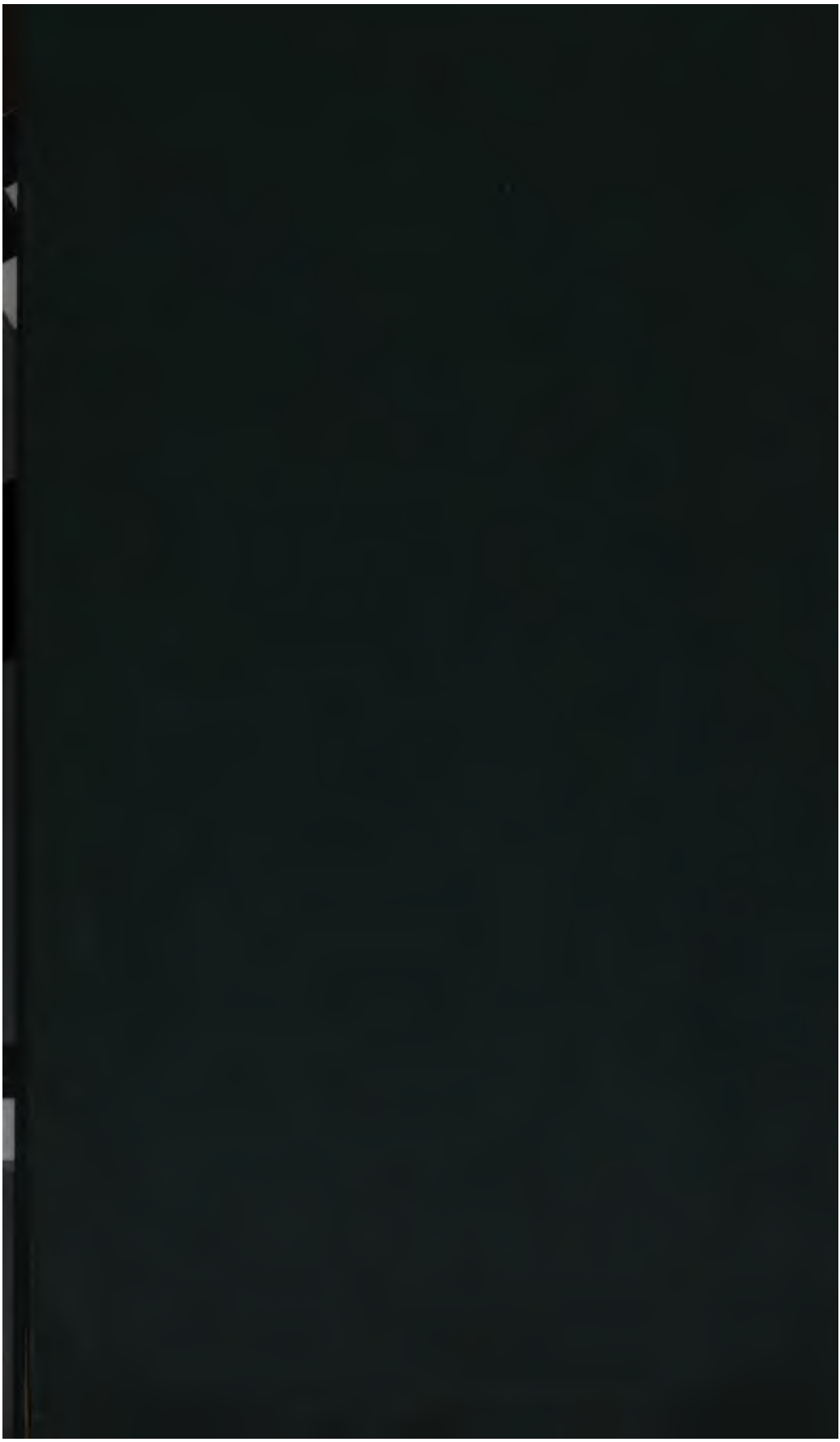
TO PAINT TURTLE SHELL.

Make the ground work dark with venetian red, and rose pink and lampblack, which will form a dark reddish brown; then take a coarse sponge wet in water, dipped in venetian ground fine in varnish; dot it on the work; then take rose pink and apply it as before. Give two coats varnish.

TO PAINT OAK.

The ground work for Oak is the same as for Maple; then take yellow, Terra De Senna, and umber, equal parts of each ground together. The graining is to be wet up with strong beer. When you apply the coat of graining take a large new paint brush,

and strike all over the work with the ends of the brush, and thoroughly dry. Then take a fine pencil brush, add muriatic acid, and draw it across the work to form the coarse grains, and curls, and nots, and dark shades, &c. You will then give the work three coats of varnish.

TO PAINT BLACK MARBLE.

First, paint three coats black; then take pearl white, drawn in fine crooked streaks, and sky blue and yellow fine streaks, and with your blender strike these streaks partially together, so they will appear deep in the work; then give three coats of varnish.—The blender is a brush you want in all of your grainings to make the work appear nice. Follow the directions for polishing your varnish as it is laid down in Carriage Painting. Put on from three to eight coats of varnish.